The Finnish Equity Market in the Second World War:

Geopolitical Crisis from Investor Perspective

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Tiivistelmä/Referat – Abstract

The aim of this paper is to show how the Finnish stock market performed during the Second World War. The focus of this study is to show what kind of returns the stock market delivered to investors during 1937–1947 and how the Helsinki stock exchange functioned during the war. The papers ask, did the Finnish stock market react to the heightened risk of world war or, sequentially, to changes in fortunes of war. This paper also puts the Finnish stock market in comparison with the other war time stock markets in Denmark, France, Germany, Sweden, U.K. and U.S.A. This paper should be viewed as part of a growing family of studies using financial data as a main source. There are no retrospective distortions in financial data, in this case equity bid prices, giving this approach advantage compared to more traditional sources such as diaries or oral sources based on memories. The financial data determines the critical turning points as contemporaries saw them, instead that a historian determines them afterwards.

The main method of this paper could be described as financial archaeology: the available financial data, namely stock bid prices in the Helsinki stock exchange is used to see how the stock market and different industries performed during the war. Investors are generally well informed citizens and radical changes in bid prices indicate changing evaluation of the war situation, thus telling how contemporaries viewed the situation form their view point. The author has also collected earnings data for companies listed in the Helsinki Stock Exchange. With this data, the price to earnings ratio has been constructed for the Finnish stock market to study the price level of the market. This study also uses dividend yields, price to nominal book values and market cap to GDP as indicators of investors perception.
The efficiency of the war time stock exchange is also under critical evaluation: with no efficient market, the use of financial data is not reliable. It is concluded that based on the volume of trading and anecdotal evidence, the Finnish stock market was efficient enough to draw conclusions from the stock market data.

The study concludes that the Finnish stock market reacted evidently to the heightened risk of war. The stock market reached its top in 1937 and experiences a major slump after the Molotov–Ribbentrop pact in August 1939. The stock market was closed during the Winter war, but rose afterwards till 1942 as investors looked for a safe haven against the rising inflation. The government forced heavier regulation on the stock market in 1942 and diminishing chances for the Axis to win the war became evident. Previous anecdotal evidence from the stock market bubble of 1945 is confirmed with earnings data as the stock market rose way above its fundamentally accepted value after the war. The rampaging inflation, especially after the war, effectively wiped out the Finnish stock market as the 1937–1947 total return was -60% for the whole stock market and -90% for the bank stocks. When compared to the other stock markets mentioned above, the Finnish stock market shares some similarities with the French stock market: heavy debt monetization leading to higher inflation and the escape to real values propelled a stock market boom during the war, followed by a severe market collapse and evaporation of the real values of stocks.

Avainsanat – Nyckelord – Keywords
The Second World War, War, Stock Market, War Economy, Helsinki Stock Exchange

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Tiivistelmä/Referat – Abstract

Tämän tutkimuspaperin tarkoitus on näyttää, kuinka Suomen osakemarkkinat käyttäytyivät toisen maailmansodan aikana. Tutkimuksen ytimessä on kuvailla, minkälaisia tuottoja sijoittajat saivat vuosina 1937–1947 ja kuinka pörssi toimi instituutiona sodan aikana. Tutkimus kysyy, kuinka pörssi reagoi lähestyvän sodan uhkaan ja voiko pörssi ylipäätään kertoa jotain aikalaisten odotuksista sodan ja sen käänteiden suhteen. Osakemarkkinan kehitystä verrataan myös Tanskan, Saksan, Ranskan, Ruotsin, Yhdysvaltojen ja Yhdistyneen Kuningaskunnan osakemarkkinoiden kehitykseen vastaavalla ajanjaksolla.

Tutkimus käyttää osakkeiden hintadataa pääasiallisena lähteenä. Pörssidatan lisäksi tutkimus hyödyntää anekdoottista tutkimusaineistoa aiemmista tutkimuksista sekä Kauppalehden vuosien 1939 ja 1944 numeroita aineistonaan. Metodia voi kutsua taloudelliseksi arkeologiaksi missä finanssidatan annetaan määrittää, missä kohtaa historian tärkeät käänteet ovat aikalaisten käsityksen mukaan tapahtuneet, sen sijaan että historioitsija päättäisi ne jälkikäteen. Tutkimukseen on kerätty myös Helsingin pörssiin listattujen yhtiöiden tulokset 1937–1947. Näiden avulla on pystytty laskemaan pörssin P/E –luku eli yritysten pörssihinnoittelua kuvaava tunnusluku. Siten aiempi anekdoottinen todistusaineisto vuoden 1945 pörssikuplasta on voitu todistaa, sillä tunnusluvut nousivat reilusti yli tutkimusjakson keskiarvon tänä ajankohtana. Tutkimus käyttää hyväkseen myös efektiivistä osinkotuottoa ja osakkeiden hintaa suhteessa nimellisen kirjanpitoarvoon per osake pörssin hinnoittelun kuvaamiseen. Pörssi oli sodan aikana tarpeeksi tehokas, jotta pörssidataa voi käyttää luetettavana lähteenä.

Tutkimuksen lopputulemana on, että pörssi reagoi selkeästi nousevaan sodanuhkaan erityisesti elokuun 1939 Molotov-Ribbentrop-sopimuksen jälkeen ja alkoi hinnoittelemaan tulevaa sotaa syksyllä 1939 osakkeisiin. Talvisodan pörssi oli kiinni, mutta sodan jälkeen vuoteen 1942 asti pörssi nousi inflaation nostaessa päätään. Vuoden 1942 jälkeen pörssi toimi selkeästi turvapaikkana sijoittajien säästöille, eikä yhtiöiden fundamenteilla ollut sijoittajille niin väliä kuten nousseet arvostuskertoimet osoittavat. Sodan jälkeen pörssi nousi voimakkaasti spekulatiiviseen kuplaan 1945, mutta romahti yhtä nopeasti ja yhdessä sodanjälkeisen inflaation kanssa sijoittajien reaalituotot jäivät vaatimattomiksi: Helsingin pörssi menetti noin 60 % arvostaan ja pankkiosakkeet peräti 90 % arvostaan vuosien 1937–1947 aikana. Verrattuna muihin yllämainittuihin pörsseihin, Helsingin pörssi jakoi samanlaisia piirteitä Ranskan osakemarkkinan kanssa. Rahan printtaaminen, reaalitavaroiden pula ja nouseva inflaatio ajoi rahaa osakkeisiin, jotka nousivat sodan aikana voimakkaasti mutta laskivat sodan päättyessä. Inflaatio ja pörssiromahdus efektiivisesti tuhosivat sijoittajien säästöt.

Avainsanat – Nyckelord – Keywords
Toinen maailmansota, pörssikurssit, pörssiyhtiöt, sotatalous

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1. Introduction and the Description of Problem

The aim of this paper is to show how the Finnish stock market performed during the Second World War. While the political establishment and contemporaries in general were not expecting that Finland would be dragged into escalating war in Europe, the stock market evidently reacted to Molotov–Ribbentrop pact and discounted increasing threat of war since the end of August 1939. The use of financial data, by observing stock market movements, can provide interesting perspective how contemporaries viewed the development of geopolitical crisis never seen before in this magnitude. Wars can be devastating for stock market. For the past century, there have been two world wars and numerous conflicts. Some of them, like the Cuban missile crisis, almost brought the whole world to the brink of extinction. One Great Depression and Great Recession look shy when juxtaposed next to these wars. Wars bring havoc to financial markets and war impact can be more powerful to stock market returns than recessions or financial shocks.[1] Geopolitical crisis can have significant impact to stock market performance, consider just the more recent behaviour of the Finnish stock market during the Crimean annexation in 2014 or U.S. stock market behaviour in Iraq War 2003[2]. War–time conditions is interesting focus point of curiosity for scientific inspection.

This study could be viewed as a part of the growing family of studies that use financial data as a historical source, a topic which will be discussed with more detail below. In short, financial data captures the expectations and perceptions of contemporary agents. While historians do have the benefit of hindsight, they are exposed to the risk of narrative fallacy. That is, as Nassim Taleb put it, we humans have tendency to build explanations and logical links to sequences of facts even when there's none, i.e. retrospective distortions.[3] Hindsight is a double–edged sword: without its impossible to

[1] See Ferguson 2008, pp. 431–477. For long time stock market performances, see for example Global Investment Returns Yearbook 2015 by Credit Suisse Research Institute and performance of German, Italian or even more dramatic Russian equity and bond markets. The Russian case is the most dramatic as the whole stock market was wiped out after the communist revolution demolished private ownership of capital.
[2] See Rigobon and Sack 2013.
[3] Taleb 2010, p. 7. Historians should be more than prepared to confront this problem as it is known for long, see for example Carr 1961.

build any sequential narrative about the past, or "write" history, but the same time we lose touch with the element of uncertainty and the nuances that contemporary real–life decision makers faced.

To back up the historical reasoning which is based on stock market performance in this study, financial results of the Finnish companies listed in Helsinki Stock Exchange (from now on HSE) have been collected by the author. Using this data, a price–to–earnings[4] series for 1937–1947 is constructed, first of its kind in historical studies to illustrate the price level of the stock market. Historians have used bond prices in a similar fashion before.[5] The anecdotal evidence about speculative booms of 1941 to 1942 and 1945 are confirmed using this data when the P/E ratio skyrocketed, suggesting stocks were rising more than fundamental values of businesses would justify under any circumstances.[6]

This paper asks four questions that are formulated as follows.

i) How did the Finnish stock market develop during World War II? This paper gives a general picture how the HSE functioned as an institution and what kind of returns the Finnish stock market delivered during this period of crisis. A general narrative is provided in the analysis.

ii) Did the Finnish stock market react to the heightened risk of war? The most interesting question is how the stock market performed before the war. Can German and, later, Soviet aggression be seen in how the stock market behaved? These sorts of questions have been asked from bond data that shows how investors believed the real value of government bonds perform under the stress, threat and presence of war. Considering recent stock market routes under similar domain of uncertainty such as the Ukrainian crisis of 2014 or Iraq war in 2003, the question is valid indeed.

[4] Price–to–earnings ratio is earnings multiple to describe the price level of the market. All the terms are explained below in chapter four.
[5] See, for example: Ferguson 2008. More studies inspected in Review of Literature chapter, see below.
[6] Fundamental value refers to a concept that companies do have a real, intrinsic value. Intrinsic value is the discounted value of all future cash flows or the value of holdings of that company has in its balance sheet: to sum up, fundamental value is the value that can be extracted from the company over its life time.

iii) What can the performance of the Finnish stock market tell about the expectations and perceptions of contemporary agents living in the middle of uncertainty? The use of financial data is valuable, since the biased hindsight cannot dilute the credibility of the data.

iv) How the Finnish stock market performance relates to other stock markets during the turbulent period?[7]

The questions are answered in the analysis chapter, but important background information is provided in the fourth chapter considering methodologies and material. As this paper shows, the stock market was affected by regulation, speculation, rising taxation and at the end of the war acted like a hedge against rising inflation, but insufficiently. The Bank of Finland financed the Continuation War partly by monetizing debt which affected the price level and thus impacted the real value of equities. Same debt monetizing did take its place in France and Germany and both had high inflation, too. This paper also sheds light how the rising price level affected the real value of the stock prices and shows that equities were not a good hedge against inflation.[8]

The paper is organized as follows. Chapter two will provide a review of literature. Then, chapter three walks reader through the theoretical framework and discusses the problems about the efficient market hypothesis and how accurately the market data can be used as material for this paper. Chapter introducing methodological aspects and the material used follows, bringing theory and practice together. After this groundwork, the analysis puts all the knots together. Conclusions will be represented at the end of the paper. While it is recommended to read the paper from beginning to end as the narrative unfolds itself, for hasty reader, the introduction and conclusions will be sufficient to grasp a picture deep enough about the subject.

The 1930's marked a drift towards heightened ambitions of conquest and retaliation in nations ruled by populist governments, visioning a new world order. Most dramatic consequence of political contingency followed by the Great War was its sequence, the

[7] Those markets being Denmark, France, Germany, Sweden, U.K. and U.S.A.

[8] The effect of inflation to stocks is a long debated one. However, it seems that while expected inflation is in the short run irrelevant to real returns in stock market, in the long run high inflation and especially unexpected inflation causes negative effects to real return of the stock markets. See Lin 2009, pp. 783–795.

Second World War, called by Sir Winston Churchill "the unnecessary war"[9], that caught fire in Europe by Autumn 1939. It was followed by the failure of France's and Great Britain's appeasement policy towards the belligerent and expansionist Germany.[10] Germany, eager to expand her Lebensraum and seeking retaliation after the defeat in the Great War and the humiliating chaos that followed, crusaded yet again on a great gamble against a formidable array of superior enemies, economically speaking. Time was against this endeavour. After successfully annexing Austria and Czechoslovakia, Autumn 1939 marked the end of diplomatic triumphs for the Nazi Regime that then continued its aggressive pursuit by means of brunt force.[11] The Molotov–Ribbentrop – Pact unchained the Third Reich from the risk of two–front war and divided Eastern Europe, including Finland, under German and Soviet spheres of influence. Finland was to become part of Soviet Union that consequently started to demand territory and military bases from Finland. The government of Finland rejected these proposals. In the following Winter War 30.11–1939–13.3.1940 Finland fought against Soviet invasion and in the end seceded some of her territory to Soviet Union.[12]

Immediately after the declaration of peace, Prime Minister Ryti stated in his speech to Parliament that reconstruction would take place with "sword in the other hand and turner in the other".[13] Finland soon aligned herself with Germany and fought Soviet Union the Continuation War, from 25.6.1941 till 19.9.1944 in an aim to regain the lost territories in the Winter War. The war was lost and the Finnish Army was pushed out from the Soviet Union. Finland had to cut the ties with Germany and the German military retreated from Lapland. Finland had to pay heavy war reparations to Soviet Union and after the war diplomatically balanced herself between the Western and Eastern camps of the Cold War.[14]

The war caused severe stress to Finnish economy. State officials had to cope with expensive war by taking more responsibility to run the economy. War production rose six–fold from 1938 to 1944. Defence spending took a lion's share of the government

[9] Churchill 1954, p. x.
[10] Sir Hart 1968.
[11] See Tooze 2006, p. 285–326.
[12] Kirby 2006, p. 197–198.
[13] Meinander 2006, p. 180–190.
[14] Kirby 2006, p. 220–230.

budget. Finland's ability to feed her army and people in the Continuation War was heavily subsidized by Germany. Regulation was strict but black market flourished.[15]

The War affected Helsinki Stock Exchange in many ways too. The exchange was closed for few days after the German invasion in Poland started Poland in September 1939. Stock trading was suspended after belligerent actions from Soviet Union 10.10–22.11.1939. During the Winter War the whole exchange was closed until 1.4.1940 when it was reopened and stayed that way for rest of the war.[16] Next, this paper gives reader a review of previous studies and studies concerned in explaining stock market movements.

2. Review of Literature

This chapter inspects the literature and studies concerned with the problems introduced above. There are no explicit studies concerned how the Helsinki Stock Exchange reacted to war, but many studies have the same method of using financial data as material for historical inquiry. Wars have frequently affected equity markets, sometimes in a fundamental way as tens of years of market returns were erased and hard–earned savings are destroyed by galloping inflation. Review of Literature serves as prologue to the theoretical framework conversation following in the third chapter.

2.1. Research Context: Asset Prices as a Historical Source

One of the first research papers, where historical asset prices were used as a basic source of material rather than conventional letters, diaries or verbal statements, studied the behaviour of the Greenback during the U.S. Civil War. Starting in 1862, United States issued an inconvertible currency called the Greenback to bolster the Union government budget constrained by the expensive civil war against the rebellious Confederate States. People hoped that after the war, Greenbacks could be converted

[15] Meinander 2009, p. 109–118.
[16] Stjernschantz 1987, p. 78.

back to gold dollars in one–for–one ratio. As the Greenback was guaranteed only by the U.S. government and had no intrinsic value *per se*, its price in terms of gold was effectively "a running commentary on the Union's fortunes, as perceived by participants in financial markets."[17]

This approach has some prominent advantages. Instead of listing important turning points *a priori* and testing their importance, the study allowed the data itself to identify important dates. Some events overlooked by historians were regarded important by contemporaries and *vice versa*, if price actions are to be believed.[18]

The link between the Greenback and the progress of Civil War was quite pronounced as the Greenbacks existence was explicitly bound to the fate of the Union. The same shared destiny can be found with government bonds. Frey and Kucher observed the value change of national government bonds issued in Swiss Francs that traded on the Swiss bourse for the period 1933–1946. As above, they point out the advantages with capital market data. The data reflects all the available information, and more importantly, all the expectations at any given point of time. Thus, future insights are removed. As written above, the element of uncertainty is incorporated in the data while of course the real decision making process agents went through is still hiding in the shadows. Agents in financial markets should have strong incentives to carefully evaluate the situation as the future of their finances are directly affected[19], "putting their money where their mouths are", as the idiom goes. They also remark that financial markets usually possess high predictive power due to so–called marginal traders.[20]

The econometric method Frey and Kucher applied searched for structural breaks in the series of bond prices. A four–step procedure determined which periods to look at and test for statistically significant structured breaks within each of the windows isolated.

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[17] Willard, Guinnane and Rosen 1995, p. 3.
[18] On the efficiency of the market to incorporate all the news to prices, see discussion below. The problem is also highlighted in the above–mentioned study, see p. 6–8. Evidence shows that the postulate that gold traders were informed holds and the market was efficient enough.
[19] Frey and Kucher 2000, p. 188.
[20] The Marginal Trader Hypothesis, or MTH postulates, that despite the inclusion of poorly informed or market–ignorant participants, a small part of the trader population, but equipped with superior market intellect or information, will steer the market price to efficient levels as a by–product of exploiting mispricing. See Blackwell and McManus 2011, p. 1–2.

Only one event, the "official" outbreak of the Second World War, produced statistically significant break points in all five countries. Observed raw data showed that German government bonds fell towards the end of 1939 and rose back after the successful so–called Blitzkrieg campaign in the West. From the second half of 1941 they started a permanent fall, suggesting bond markets anticipated a loss for Axis cause, especially after the invasion of Normandy in 1944.[21]

Frey has produced another research paper with Waldenström, focusing on the government bonds of Nordic Countries Denmark, Finland, Norway and Sweden. They recall that according to conventional Nordic historiography, there was only few if any in these countries who believed in the increased threat of war.[22] The case for studying bond prices is strengthened here: Frey and Waldenström argue that war imposes extraordinary pressure on fiscal balances, hence increased sovereign risk or higher yields on traded debt, respectively.[23] Thinking over the history of public debt, the argument could be said to be relevant.[24] Comparing the two empirical methodologies, historical writing and econometric measuring of large shifts in asset prices, Frey and Waldenström discovered disagreements in several instances. For example, while historians claim that Nordic people felt safe until Autumn of 1939 in case of Finland or early April 1940 in case of Denmark and Norway, the prices of bonds in fell considerably several months before these ex–post conjectured dates. In other instances, market data and historical writing complements each other.[25]

2.2. Research Context: Asset prices and News

In above studies, asset prices were used to identify important events as contemporaries viewed them during war, compared to what historians have figured out as turning points *ex–post*. How about the relationship between asset prices and news? Do asset prices react to news and if they do so, how strong should this reaction be? This should be an interesting question in a sense that while financial markets should evaluate and discount

[21] Frey and Kucher 2000, p. 189–191.
[22] Frey and Waldenström 2006, p. 5–7.
[23] Frey and Waldenström 2006, p. 3.
[24] See Reinhart and Rogoff 2009.
[25] Frey and Waldenström 2006, p. 18.

all the possible information to prices of securities trading in the present, including long term trends, how much do short term news affect them? As we will see, it seems that investors gauge information and incorporate it into asset prices incrementally, thus making the picture blurry about how individual news affect prices in the long run.

One of the first studies where the relationship between news and asset prices were studied was Niederhoffer's "The Analysis of World Events and Stock Prices". The study picked news about world events that appeared in New York Times headlines. The problem with this method is of course that some events could have gone unnoticed in news sources until picked up later by public or that the reaction of markets could have influenced which news were picked to headlines in the first place.[26] News were then assorted to seven categories from "extremely good" to "extremely bad" and the study observed movements in the general stock market index in the five days immediately following the world events. Research paper notes that it could take weeks or even years for the full influence of the events, and the compounding effect of other news makes the picture blur in the longer period. The study found that there was a strong tendency for good headlines to follow good and bad headlines to follow bad.[27] During crisis, in this case burst of world events, 42% of the daily changes were big. World events did affect stock prices in a discernible way as there was a greater number of large changes than would be expected by chance.[28] Nevertheless, in the concluding remarks Niederhoffer holds that the studies stance towards random walk hypothesis is neutral, that is, it would be extremely difficult to make predictions or earn financial gain based on these headlines.[29] This paper discusses the efficient market hypothesis later on in chapter three.

A similar study with a goal to find relevant news and see what fraction of price movements news could explain studied the bond prices in United Kingdom 1900–1920.[30] Consistently with previous studies[31], the study found that while news on

[26] Niederhoffer 1971, pp. 193–219.
[27] Ibid. 1971, p. 202.
[28] Ibid. 1971, p. 205.
[29] Ibid. 1971, p. 215.
[30] Elmendorf, Hirschfeld and Weil 1996, p. 341–344.
[31] The most illustrative example is the crash of 1987 without any news of obvious importance. Onn news media and stock market behaviour, see Shiller 2005, p. 90–103 or Shiller 1987.

important events definitely affect asset prices, news explain only a small part of price variability.[32] This phenomenon is also discovered in as different asset class as orange juice concentrate, Roll's study on orange juice concentrate future prices addressed the same point: OJ futures market is inefficient due to imposed limits on price movements, which renders away the predictive power of the most obvious factor, the weather. But, "yet no factor was identified that can explain more than a small part of the daily price movement in orange juice futures. There is a large amount of inexplicable price volatility."[33]

Unsurprisingly, the lack of explanation power of news on asset prices has given demand for theories that explain movements without news. For most economists who try to seek rational causes for market behaviour, irrational "fads" and "bubbles" seem unsatisfying and unscientific explanations. Romer strikes in the middle ground that the market movements can be rational even without news affecting the fundamentals as investors and analyst assessment of them is incremental but not instant process and trading only gradually conveys information about the investors updated future expectations.[34] De Long et al. argue that so–called noise traders, acting on noise as if it were information, could affect market prices on the short term when their better informed colleagues see the risk and reward ratio too low for arbitrage, adding explanation to movements without news.[35]

2.3. Markets Under Siege: The Stock Market and War

There is an absence of explicit studies on Finnish Stock Market during the Second World War. Most studies regarding the stock market are occupied with overall market performance[36], equity premium which requires long time series of historical returns to reduce estimation error[37] and testing the Efficient Market Hypothesis[38] to mention a

[32] Elmendorf et al. 1996, p. 344.
[33] Roll 1984, p. 879.
[34] Romer 1993, p. 1129.
[35] See De Long, Schleifer, Summers, and Waldmann 1990, pp. 703–738.
[36] For studies about long term index performance and stock market index constructing, earlier period 1912–1929 see Poutvaara 1996.
[37] Nyberg and Vaihekoski 2011.
[38] See for example Sierimo 2002.

few[39], but those are subjects inside the realm of economics. Nyberg and Vaihekoski briefly mention that the Finnish stock market "was heavily affected by the Second World War", that the decade of the 1940's was "characterized by a high level of inflation"[40] and "(the war) appears to have been devastating for the stock market" as the real equity values shrank to 36% at the end of decade compared to values in the beginning.[41] Tiderman, in his brief historical review of Helsinki Stock Exchange during 1937–1962, mentions the Second World War from very general point of view, mostly describing how the stock market moved and how investors tried to escape inflation after the war.[42]

An interesting study by Palmgren (and also quite unique, there's not much studies from a common investor perspective, as noted by the study) tries to calculate what were the stock returns for common investor for the 30 year period 1926–1956. The period is chosen on the basis that it is a long enough time span to include many economic cycles and conditions, thus giving credibility for the long term stock market performance observation. The study is heavily tilted towards a common saver experience and focuses on the 13 stocks that comprised the UNITAS index. The study is concerned by the same questions about dividends, share issues and the value change of the currency as Vaihekoski's and Nyberg's papers were. He mentions the post–war inflation as a remarkable driver to transfer savings from bank accounts to stocks, but still the activity of stock investing is muted, he concludes. Especially industrial stocks' returns were good, from 0 to 11.6% per annum (the best stock for the period being Wärtsilä, the worst, Finska Socker). For banking stocks the real return was deep below the water mark. The actual war period is mentioned from the inflation and the war economy perspective, but leaves much in the shadows.[43]

The war period is also commented by Stjernschantz, but mainly from the institutional point of view. On the other hand, Stjernschantz provides important qualitative remarks for this paper about the development of the stock market and investor moods of the time

[39] For overall stock market behaviour, see also earlier study by Kallunki, Martikainen, Martikainen and Yli–Olli 1997, p. 474–495.
[40] Nyberg and Vaihekoski 2011, p. 10.
[41] Ibid. 2011, p. 29.
[42] See Tiderman 1962.
[43] See Palmgren 1958, pp. 50–65.

period. The stock market played a walk–on *rôle* in the Finnish war economy but had its portion of negative attention from the government. Inflation rose as war expenditures were increasingly financed with the money printed by the Bank of Finland. In the same time the quantity of available goods in the market was reduced. Savers looked for safe havens, allocating their inflation sensitive savings to real values that had some hard assets behind them, such as shares of industrial companies. The government tried to turn the money flow to finance war expenditures and intervened the stock market in many ways as we will see below.[44] Kantanen has comments on the war time or how it affected different company shares and businesses. For example, in 1942 the Finnish government requested for 13 new companies to be listed in the stock exchange to increase supply of shares and contain rising share prices, a subject we will return later.[45]

In other words, there is room for deeper inquiry of the period. It seems that the Finnish experience was quite similar compared to that of France as we will see below. France experienced a massive inflation due to printing of new currency that flew into circulation and ballooning asset prices eventually collapsed when the quest for safety was subdued at the end of the war.

Generations of thinkers from Montesquieu to Keynes have reiterated that wars disrupt trade and are generally harmful for the economy.[46] Wars can have a calamitous effect on the stock market: compared to one Great Depression and a number of smaller financial crisis, there have been two world wars and the Cold War, after all. Barro and Ursúa have studied long–term data for 30 countries up to 2006. Among the 232 discovered stock market crashes (defined as multi–year returns of -25% or less), 71 matched with depressions (defined as multi–year declines in consumption or GDP of -10% or less) and 29 (41%) of those were associated with war.[47] Rising political uncertainty and declining economic output levels seems to increase volatility in the markets.[48]

[44] Stjernschantz 1987, p. 78–83.
[45] See Kantanen 2012.
[46] Schneider and Troeger 2006, pp. 623–645.
[47] Barro and Ursúa 2009, p. 40.
[48] Bittlingmayer 1998, pp. 2243–2257, p. 2246.

Ferguson has studied financial markets under war conditions and argues that the First World War was a "bolt from the blue"[49], causing financial crisis that caught investors unprepared. Trading was closed in global stock markets for five months, the first time for London Stock Exchange ever.[50]

If almost no one could believe that the Great War would ever materialize[51], the Second World War was not a total surprise for the City nor financial markets in general.[52] Ferguson argues that history was not a helpful guide to navigate through the financial, as equity performance differed vastly from the First World War. To mention one example, in the United Kingdom the equity returns in real terms were poor in WWI, but beat all the other markets in the WWII.[53] Studies on more recent conflicts like the Gulf War support the same conjecture: most often conflicts are bad for stock markets as difficult–to–measure uncertainty rises but occasional "war rallies" can also present themselves.[54] Sometimes it seems that markets are almost indifferent to geopolitical crisis, as the stock market reaction to Cuban missile crisis showed. The market reaction was minimal, which is somewhat surprising given that the future of the whole humankind was at stake, even though the public was not well–informed and did not know how close the conflict was about to turn Cold War into a hot one.[55]

As implied above, interestingly the experience of French equities during the Second World War resembles the performance of Finnish equities. Le Bris has studied the performance of equities in the Franco–Prussian War and during the both World Wars. France was conquered in a quick manner by the advancing Wehrmacht and put under German occupation for four years. *Banque de France* created new money without equal creation of wealth to finance war expenditures. Germany forced the French government to pay indemnity and the costs of occupation, causing massive expansion of money supply and surging inflation.

[49] An idiom often used indeed, see Roberts 2013, p. 22–39.
[50] The event quite exceptional when taking into consideration that this was the first closure ever in London Stock Exchange, established 1773.
[51] See MacMillan 2013.
[52] Ferguson 2008, p. 462.
[53] Ibid. 2008, p. 440.
[54] Schneider and Troeger 2006, p. 642–643.
[55] Ferguson 2008, p. 470.

During the period, all assets were controlled and cross border money flow was prevented. Price controls were imposed on goods. Thus, money could only buy national assets. All free prices rose and stocks that had hard assets backing them rose the most. By 1943, the end for this exceptional situation appeared on the horizon as Germanys fortunes turned around; the upward movement in stock prices reverted itself. Le Bris argues that the method how war was financed affected how equities performed. During the Second World War, rampaging inflation purged savers as real equity values dropped almost 90% from January 1939 till January 1949.[56]

In another paper, Le Bris divided the French Stock Index CAC 40 to two different sub–indexes: "Military Providers" and all the others. The study did not find any difference in returns between the two indexes, even though it is plausible to assume that equities of the Military Providers should outperform others. The problem is that none of the companies in the Military Providers was a pure–player in weapons industry and many steel industries were located near the German border.[57] This same sort of comparison between industries is presented in this study as well.

In French experience, stocks could not match inflation and eventually proved to be inadequate hedge against the rising price levels. The effect of inflation to stocks is a long debated one. However, it seems that while expected inflation is in the short run irrelevant to real returns in stock market, in the long run high inflation and especially unexpected inflation causes negative effects to real return of the stock markets.[58] Also the German Stock Market was decimated during the war because of practically stalled trading and the collapse of the currency.[59] Inflation hurt savers, but the devaluation of the currency must have added to their woes. The Finnish Markka was also devalued multiple times during 1945–1947, which could have pushed security prices further down. However, it is plausible to assume that the effect of devaluations was limited since the number of foreign stock holders must have been very limited, if non–existent,

[56] Le Bris 2008, p. 4–10. Accessed 3.12.2016 http://www.keynes.dk/fresh/3/le_bris.pdf. The French equity returns matched the ones in Finland that also lost around 90% of their value during this period.
[57] Le Bris 2012, pp. 337–361, p. 6–9.
[58] Lin 2009, pp. 783–795.
[59] Ferguson 2008, p. 39–41.

during this turbulent and protectionist period under question. Besides, devaluation props export oriented companies.[60]

As a side note, it seems that under German boot, also the art market experienced boom–and–bust–styled pattern as art was supposed to be an inflation hedge too.[61]

3. Theoretical Framework

Critical to this thesis is the postulate that markets are somewhat efficient: they do incorporate all the available information affecting fundamentals of companies into the share price. Prices are nodes of information, in the sense of Hayekian tradition.[62] Thus, at any given point of time, the price of the share is the sum of all reflections: rational, calculated expectations about future development and therefore the behaviour of investors is logical. As written above, in this paper the stock market is used as a historical source with the conjecture that the market reflects developments in the outside world. If markets were inefficient, or irrational, the reliability of price actions as a historical source could be questioned. Therefore, the assumption about market rationality and efficiency is the key of this research. This chapter walk through the theoretical framework of this paper, bringing the theory to context of the historical inquiry and discussing the problems and limitations of the theory.

3.1. Equity Investing in theory

Essentially, changes in stock prices are driven by supply and demand. If there is more demand than supply, then stock price appreciates and vice versa. Price is what investors pay and value is what they get.[63] If an investor believes stock X will be a good investment, she should buy it, thus being "long" in the market until she believes the market is going to reverse its direction and decline. If she believes the market is going

[60] See Patro, Wald and Wu 2014, pp. 79–94.
[61] David and Oosterlinck 2012, p. 19–20.
[62] See Hayek 1945, p. 519–530.
[63] This very illustrative point was made by Ben Graham and cited by Warren Buffett in his 2008 letter to shareholders. Source: Berkshire Hathaway Inc. 2008 Annual Report. This point also suggest that share prices tend to differ from their fundamental values from time to time.

down the investor should stay away from the market or "short" the stock. That is, borrow the stock and sell it later on with cheaper price and get the difference minus expenses to herself.[64] The next logical step to the investor is to try to analyse the value of the stock. According to the efficient market present–value model stock markets reflect revisions in expected future cash flows or discount rates. Expected cash flows are then paid to investors as dividends. Thus, stock prices could be explained by the future dividend income they create. Heuristically this is modelled by the traditional Gordon valuation model:

$$P_t = D_t / (r-g_t),$$

where P_t is the price, D_t is the current dividend and the constant r is the real required dividend. The "permanent" dividend growth rate g_t is unknown, thus investors are required to re–estimate it from time to time when new information arrive that could change calculations of the future income stream.[65] In a nutshell, share price is equivalent of the discounted sum of all the future dividends.

3.2. The Efficient Market Hypothesis: A Walkthrough

One of the first books advocating more scientific inquiry into the stock valuation process was Irving Fisher's The Nature of Capital and Income, published in 1906. As the preface states, the "book is an attempt to put on a rational foundation the concepts and fundamental theorems of capital and income".[66] The attempt was not unique: the same spirit can be seen in Louis Bachelier's thesis Theory of Speculation. The opening paragraph is revealing:

> The influences which determine the movements of the Stock Exchange are innumerable. Events past, present or even anticipated, often showing no apparent connection with its fluctuations, yet have repercussions on its course. Beside fluctuations from, as it were, natural causes, artificial causes are also involved. The Stock Exchange acts upon itself and its current movement is a function not only of earlier fluctuations, but also of the present market position. The determination of these fluctuations is subject to an infinite number of

[64] Sornette 2003, p. 33.
[65] See Gordon 1962, p. 37–51.
[66] Fisher 1906, p. Vii.

> factors: it is therefore impossible to expect a mathematically exact forecast. Contradictory opinions in regard to these fluctuations are so divided that at the same instant buyers believe the market is rising and sellers that it is falling.[67]

Between the lines, the concept of random walk is visible. Random walk is the other side of the coin for efficient market hypothesis: if markets were efficient, there should not be large price distortions from the fundamental values to take advantage of. Price movements are independent, thus the future price movements cannot be predicted based on the price actions of the past.[68]

As Fama postulates in his famous research paper, the random walk essentially states that over the long term, it should be impossible for investors to beat the market, ie. make more money by picking individual stocks compared to buying the whole index where all the stocks are represented.[69] But to claim markets to be efficient, we are required to consider what kind of features the market should possess. First, in an ideal market place there would be no transactions costs. Secondly, all the information should be available to all agents operating in the market without costs. Thirdly, all agree with the implications of news to current price and distribution of future prices of each security.[70] As the above case with oranges showed, the ideal market is seldom the condition of reality.

3.3. Limitations of the theory and the reflexivity of the market

The efficient market has had lot of critique since its inception.[71] However, it is not the main purpose of this paper to consider economic theory. Only the most relevant points are considered. For example, many studies claim that psychological factors play their part, underlining the fact that humans as economic agents are not capable of constantly rational behaviour.[72] A Study by Hirshleifer and Shumway found that sunshine is highly

[67] Bachelier 1900, p. 21. Translated to English by D. May.
[68] Efficient markets hypothesis is famously promoted in Malkiel 2012.
[69] Fama 1970, p. 414–416.
[70] Fama 1970, p. 387.
[71] Representing the most usual critique, see Malkiel 2003, pp. 59–82.
[72] Humans seems lack capacity to be rational calculating agents all the time. See for example Kahneman 2011.

significantly correlated with daily stock returns. A trader without transaction costs could have improved his or her risk–adjusted returns in market portfolio (called Sharpe ratio in economics), but transaction costs eliminated this advantage. The sunshine effect is hard to reconcile with fully rational price formation in the market.[73] At least in the short term, market seems more like a voting machine (only money, no intelligence nor skill is required), vulnerable to irrationality, rather than rational weighting machine, to use Benjamim Graham's phrase liberally.[74]

And, if the market were efficient, who would have the incentive to trade since there could be no chance for excess returns. Being smarter than the market brings no advantage nor is being stupid a disadvantage. There must be some inefficiency in the market to make trading possible and compensate for the cost of information.[75] Equity prices have higher volatility than suggested by the volatility of the present value of dividends paid *ex–post*.[76] Shiller and Campbell have pointed out that higher P/E ratio forecasts lower future returns, contradicting the non–predictability of the random walk.[77]

The stock market is a place mainly for practice under the domain of risk taking (reward in mind) and less for theory. Then it could be argued that practitioners have their word as well. From the practitioner's side, the famous trader George Soros claims that our perception of the world is bound to be biased, inconsistent, or both. Hence, we are fallible. Then add to this the notion of reflexivity. For example, if investors believe that the market is efficient, they will change their investing style in concert with this perception, which will in turn change the nature of market. The market is not a static objective to be observed objectively but it is also reflecting like a mirror, forming a feedback loop on how market participants rationalize the market in their thinking and action. Knowledge and action are not independent. While the principle of fallibility is a sort of no–brainer, with the principle of reflexivity it corrodes the efficient market hypothesis. Soros sees that the market equilibrium, where the market participant's

[73] Hirshleifer and Shumway 2003, p. 1028.
[74] See Berkshire Hathaway 1993 Shareholder letter http://www.berkshirehathaway.com/letters/1993.html. Accessed 15.1.2017.
[75] See Grossman and Stiglitz 1980, p. 393–408.
[76] Robert, De Long: 1993, p. 291–311, p. 291–293. See also Shiller 1980.
[77] Shiller 2005, p. 186.

perception of the market corresponds the objective reality, is an exceptional or extreme situation and the fundamental feature of the market is to levitate away from equilibrium. According to Soros, the fundamental nature of the market is dynamic dis–equilibrium.[78] While lacking academic support for his theory, formulating market dynamics this way in practice has been quite lucrative for Soros himself.

The Efficient Market Hypothesis does not postulate that efficient market is always right. But if one's intellectual stance is that the market is efficient, its very short leap to frame it as being right all the time as well, which could lead to dangerous situations in investing. If stocks are highly priced, one could think the market is rationally expecting growth in profits and is correct in anticipating it when as a matter of fact, risks are elevated in high–multiple environment. Empirically, high earning multiples are usually followed by low or negative multi–year returns and low multiples are followed by high multi–year returns.[79]

It is notable that many market commentators dislike the theory. Barton Biggs slashed that "just as a stock doesn't know or care that you own it, the market doesn't know you've written an equation for it".[80] Arguably the most successful investor in the world, Warren Buffett, argues in his famous The Super–investors of Graham–Doddsville that many successful investor tend to come from a certain branch of (value) investing, suggesting that certain investing strategies lead to alpha[81] consistently which is impossible in the world of the efficient market hypothesis.[82] As historian Barbara Tuchman eloquently put it, "You cannot extrapolate any series in which the human element intrudes; history, that is, the human narrative, never follows, and will always fool, the scientific curve."[83]

[78] See Soros 2008, p. 25–78.
[79] See Diagram in Shiller 2005, p. 186–187. See also Campbell and Shiller 2001, p. 25–26. High P/E ratios forecasting lower returns on equities is an effect that should not exist in the theoretical world of the Efficient Market Hypothesis.
[80] Biggs 2014, p. 92.
[81] Alpha refers to market returns above the similar market portfolios with less risks, risk in this case defined as volatility compared to general market.
[82] Buffett, Warren: The Superinvestors of Graham–Doddsville as in Graham 2006, p. 537–560.
[83] Biggs 2014, p. 2.

To sum up, the Efficient Market Hypothesis as a theory is most of the time true with many caveats. It has limits and it is intellectually untenable to take it literally. Indeed, it is dangerous to give too much confidence to prices: they are the sum of estimates by fallible human beings who are inclined to herd behaviour, overconfidence, have institutional rules that impose limits on trading etc. The key takeaway, however, is that beating the market in the long run, while possible, is certainly very hard feat to accomplish. This suggests markets tend to be efficient most of the time.[84] While it's clear that the theory has fundamental flaws, in this study the assumption is made that the market is somewhat efficient and the price actions of the past can bring us insights on how contemporaries viewed the events evolving around them. This topic is brought to practice in the next chapter.

4. Methodologies and material

The methodology of this study could be described as "financial archaeology": with financial data, we try to get hints from the past.[85] This chapter explains the methods utilized and walks the reader through the material. All the terms will be profoundly explained. We will also touch the crucial question: was the market efficient enough to draw any conclusions about the market movements in the 1930's and –40's? The methodology to use the stock market as a data source to see the turning points of war can be questioned, since share prices should reflect the fundamentals of the company, not overall macro picture unless it has direct effect on the company itself. This topic will be dealt with in this chapter as well. A coherent picture of the Helsinki Stock Exchange during the time period will constructed. After this the actual analysis section shall follow.

[84] See Shiller 2005, p. 177–194.
[85] As humorously put in Jorion and Goetzmann 1999, p. 978.

4.1. Methods: Financial Archaeology

The main method of this study is a descriptive analysis backed up with statistical financial data. The idea is to construct a narrative about the development of the Finnish stock market, based on the stock index data. Because of the relatively short time frame, more complex statistical methods don't fit for the purpose. The idea of the descriptive analysis is to describe, in a non–normative way, the object under focus.[86] By observing price movements, thinking and perception of contemporary agents are discovered in the very same spirit as in the studies reviewed above in chapter two. This approach has advantages as shown above, but nevertheless it will be subjected to a critical evaluation below. Stock quotes are reliable, of course, but the efficiency of their formation is the crucial question that is touched below as well. It seems that this is the very first historical study to use earning–multiple ratios to back up reasoning.[87] Price–to–earnings multiple is used in the analysis section to judge whether the market was over–priced or were the pricing of stocks reasonable at all. This reasoning is derived from the viewpoint that stock movements themselves are just one side of the coin, unlike in bonds where the fundamental value is reflecting the credit worthiness of the state or whoever is selling them. This topic is discussed in detail below, but for now it can be said that by observing changes in earnings multiples a historian can tell if the market was rising because of rising earnings or just rising earnings multiples, echoing the investors reduced appetite for a compensation of risks.

4.1.1. The Stock Market as a Tool to Discover Past

Can stock market be used as a tool to evaluate how the war progressed? As has been shown above, many studies use bond market as a useful source to shed light on contemporaries thinking and expectations about the path of war. But the link between bonds and governments is straightforward: the more the government, via a central bank, is printing money to finance war expenditures, the less is the present value of bonds in the eyes of investors. If the state is in danger of losing the war, it is very plausible to assume that the reimbursement of bonds is very uncertain. If the government disappears

[86] See Anttila 2006, p. 285–286.
[87] Author has not run into any other historical studies using P/E ratios in stock market studies, but bond prices (yields) have been more common in this field.

totally, chances of getting any value from the bonds drops to zero even though there might be some wishful traders for some time around, hoping to recover some as in the case of Tsarist bonds in the Paris bourse after the Soviets repudiated all bonds.[88]

The question is more complicated with the stock market that contains individual companies that are capable of reaction, transformation, change and respond to different shocks and events depending on their business, fundamentals and so on. Basically, the stock market is the aggregate of all the securities traded in it. Each security is representing a share of business operating in the real world, but still the individual shares can levitate far from fundamentals, if the market is not efficient. Indeed, one has many moving parts and levels to consider: macro and geopolitical events affect individual companies whose business value are weighted in the stock market every day (when the market is open, of course). But these same events affect trading, judgment and expectations of share movements themselves as well. Are investors selling because event X is affecting their companies and the perception of a present value of a company is changed, or do they sell because they need cash for other purposes and needs emerging from the event? Or, are they selling because they anticipate others to sell? The market movement up or down, an aggregate of all agency actions, is never transparent when it comes to true motives behind trade. One tends to rationalize it afterwards, as is the way how humans function.

These questions are relevant to ask as it is imperative to highlight that the link between war events and stock prices can be problematic. As noted above, equities were not only expectations of future cash flows, hence long term investments, but safe havens from inflation or the only place to park one's savings in a very restricted, closed economic environment. However, it is important to remind that Finland was involved in a conflict with a planned economy where there was no room for private businesses. Therefore, should Finland have lost the war unconditionally, followed by occupation, the value of businesses should have been zero for investors. Certainly, that was not the case, even though their value was much less after the lost war than before it. For example, the

[88] See Oosterlinck 2006.

German defeat in 1945 was also an end to many of her businesses, the most infamous being the German conglomerate IG Farben that was liquidated after the war.[89]
A conclusion can be made that the stock market could be used as a running commentary on war as well as individual company fortunes.

4.2. About the Stock Index and the Daily Index

The stock index used in this study is the back bone of the descriptive analysis. This study uses the index constructed by Nyberg and Vaihekoski. The Nyberg–Vaihekoski index is a total return, all–share value–weighted index. The data is monthly in its frequency, capturing the month–end status of the Helsinki Stock Exchange. The index includes shares and preferred shares and was built for the years 1912–1970. The data is split–adjusted and dividends are included.[90]

Their main source was Mercator newspaper that had stock quotes provided by the Helsinki Stock Exchange. The second source was Kock webpages where listing and de–listing dates for companies can be found. Month–end bid price was collected from Mercator for every company in the data. If the bid price was not available at the month–end, then it was traced form the last available intra–month quote. Some manual corrections had to be made. It is also noteworthy that many shares were de–listed and re–listed during the time–period. During the Winter war HSE was closed so quotes from December 1939 till February 1940 are missing and zero returns were assumed in the index.[91]

To create value–weighted index the number of stocks for each share had to be collected from the so–called *Ironbook* (which is reinforced with iron covers, hence the name). Book equity capital was collected from the book as well. Dividends are assumed to be re–invested and taxes ignored which is very critical information regarding total return

[89] See Hayes 1987.
[90] See similar study in Sweden: Waldenström 2014.
[91] Since this study mostly uses averages or the whole index, it is not relevant to the whole if some stocks were traded less.

index.[92] This data is also used in this research paper to calculate market caps and other metrics fit–to–purpose of this study and was kindly delivered by Vaihekoski on request.

The index is the best available as it includes all the companies listed in the stock exchange and take the dividends into account, compared to the UNITAS index that only includes a handful of (12 to 13 in this period) companies, though their development is eerily similar. It gives a good overall picture about investors returns during the time–period. Inflation had a huge impact during the war time on real values. Therefore, the index is deflated with whole sale price index. Whole sale price is calculated and constructed by the author from Bank of Finland yearbooks 1937–1947. Whole sale price index is used on the basis that there could be some incentives to manipulate inflation data when they are expressed in the form of consumer price index. Whole sale price index should be less sensitive to possible manipulation of data, as it is well within the realms of realism to assume that consumers are more concerned about the development of consumer prices.

However, for measuring geopolitical impacts and news impacts monthly frequency is not enough. Therefore, a daily index is built for special purpose of this study by the author for certain dates. The constructed daily index is based on price quotes of 10 companies with the largest market caps at the end of July 1939. The companies were the following (from largest to smallest): Pohjoismaiden Yhdyspankki, Kymmene Stam, Enso–Gutzeit, Kansallis Osake Pankki, Suomen Sokeri, Finlayson & Co. Ab, Yhtyn. Paperitehdas, Finska Gummifrabriks Ab, Kemi and Helsingfors Aktiebank. Together their market cap was 70% of the whole market cap of the Finnish stock market (4.9 billion old FIM compared to 7 billion old FIM for the whole Finnish stock market)[93] and should considered to be a representative take and gives a glance on how investors reacted to the heightened threat of war where Finland was eventually pulled in 30.11.1939. The index is calculated as equally weighted index: all the 10 companies in the index are given equal weights, reflecting a portfolio of 10 stocks with largest market caps. The index gives a satisfyingly accurate picture on how investor's portfolios performed in the eve of the Winter War.

[92] Vaihekoski and Nyberg 2009, p. 8–19.
[93] Throughout the paper, billion means 10^9.

The data for the period 1.8.1939–29.11.1939 was collected using the stock quotes in Kauppalehti financial newspaper from those dates. Kauppalehti informed stock quotes four times a week during August, suggesting the stock market was open four times a week and then six days per week during September – November, though it was closed when Germany invaded Poland 1.9.1939–4.9.1939 and again 11.10.1939–21.11.1939 when Finland mobilized its reserves. The days when the stock market was closed are included in the index and shares are given the value of the last trading day. The values used are bid offers at the end of each day. Closing quotes are not that frequent since trading did not occur every day in the bourse where trading volume was thin.

4.2.1. Comparing Indexes

For a comparative analysis where this paper juxtaposes the Finnish stock market performance next to the other stock markets, data from the Global Financial Data is used. Stock markets included are Denmark, Sweden, France, Germany, U.K. and USA. It is noteworthy that different indexes use different kind of methods on how they are calculated. During this period, it was common to calculate indexes by using arithmetic average prices. This is made by adding the prices of all stocks together. After that the amount is divided by the number of stocks. According to Global Financial Data, the main drawback of this method is that stocks with higher prices affect the index more than stocks with lower prices. Another shortcoming is that this type of index does not take into calculation dividends, stock splits etc. While stock pricing was quite efficient in the New York and London stock exchanges, it was probably inefficient in the other five markets. Especially in Germany's stock market after 1941 when price controls were put in place stock prices did not reflect ongoing war or economic situation in any meaningful way.[94] It is again important to mention that the Nazi Economy was strictly regulated and that stock index could be flawed.[95] All the indexes are deflated with whole sale prices also provided by Global Financial Data to show the real return on equities. Indexes are yearly in their nature, as the data was available on yearly basis.

[94] Bittlingmayer 1998, pp. 2243–2257.
[95] About Nazi Economy, see extensive research by Tooze 2006.

4.3. Company Earnings and Other Material

Company net earnings are collected by the author to construct one of the main targets of this study: P/E –ratios (explanation for the term below). Individual company earnings are collected by the author for the years 1937–1944 from Firmor i Finland –yearbooks that contains the income statements and balance sheets of all the listed Finnish Companies. In some cases, individual annual reports are viewed to check the data and to acquire more specific information about the companies.[96] For the years 1945–1947 earnings data is collected from Suomen Pankit ja Osakeyhtiöt –yearbooks that contain detailed financial information.[97] Unfortunately, the year 1946 is missing from a print due to animosities in accounting standards. Therefore, earnings are collected for 27 out of 47 companies whose annual reports were available (see below the list of companies).

To measure the P/E ratio for the period, market caps and earnings or earnings, share prices and the number of shares are needed for the calculation. Share price and the number of shares data were courteously received from Vaihekoski. During the earnings data collection, nominal equity values and dividends were also collected by the author and then compared to the data received from Vaihekoski to verify the correctness of the data. There were some instances where the data received from Vaihekoski did not match the data in annual reports and financial yearbooks regarding the number of shares or share capital. For example, if a yearbook states that the nominal value of the share was X and the whole share capital was Y, then the number of shares are logically the result for Y / X. See Appendix for further discussion about companies affected by these differences in data. Important note: the number of shares and share price quotes are monthly, while earnings, nominal equity values per share and dividends are on yearly basis. It fits to the purpose of this study to use the available data as accurately as possible. It is also plausible that investors at that time had only yearly results available, so it is not that far stretched to compare monthly stock bids data to annual earnings when calculating the P/E ratio.

[96] See the primary sources below.
[97] Suomen Pankit ja Osakeyhtiöt I 1945/46, Sanomalehti Oy Nylandin Kirjapaino, Helsinki 1947. and Suomen Pankit ja Osakeyhtiöt I 1947/48, Kustannusosakeyhtiö Liiketieto, Helsinki 1949.

Quarterly trading volume in the old Finnish marks in HSE was collected by the author from UNITAS Bank Yearbooks 1937–1947, where volume is reported quarter by quarter.

4.4. Terms explained

Price to earnings ratio. P/E ratio is the price of the stock divided by earnings per share. One can also calculate it as the market cap (see the term below) of the company divided by fiscal year or 12–month net earnings of the company. In other words, it measures with which multiple companies trade compared to their earnings, i.e. how expensive or cheap they are. As a heuristic rule, P/E ratio tells how many years it would take for the investment to pay itself back, should the E component remain constant. It very much seems that the P/E ratio in the calculations of the Helsinki Stock Exchange does not reach beyond 1980's.[98] Interestingly enough, this is the first study calculating the P/E ratio of Helsinki Stock Exchange in the 1940's. P/E ratio is the most commonly utilized ratio by the investors to gauge how expensive or cheap stocks are as investments.

P/E ratio can also be calculated for the whole index as is done in this paper. The P/E ratio will be calculated as the average of all companies, i.e. all the companies get same weight in the calculation, and as value weighted P/E ratio where companies with larger market caps get greater weight. Inversely, one can calculate a E/P ratio which is equal to earnings yield that describes how much the investor would earn if the company would pay all its profits out as dividends.

Price to nominal book value. P/NV ratio is used as a substitute for a more accurate and descriptive price to book –ratio (discussed below) as there is a lack of data to calculate correct book value per share for the years before 1945. Nominal book value here means the share capital. Share capital is the initial amount of capital raised by the business by selling new shares to investors. Share capital can be subsequently changed by raising

[98] See, for example, Bank of Finland Financial Market Report 1/2005, pp. 16–17. Also, Nyberg and Vaihekoski do not mention P/E as an interesting topic. Nevertheless, P/E ratios have been calculated abroad. Longest data is available for SP500 –index, built by Shiller and accessed here http://www.econ.yale.edu/~shiller/data.htm. Accessed 23.11.2016.
P/E ratios do have some prediction power too, see: Campbell and Shiller 2001, p. 25–26.

more capital. Share capital divided by the share count gives us the nominal value of the share. When this nominal value is compared to the price P, we get P/NV.

P/NV and P/B are important ratios when measuring the stock prices against the physical net assets behind the companies as investors tried to protect themselves against inflation. Comparing P/NV change over time and between different industries gives some insight how investors viewed them under war conditions.

Price to book value. P/B ratio is a more descriptive ratio about the pricing of shares, but unfortunately the data is hard to obtain prior to 1945. P/B ratio is the share price (or market cap) of the company divided by the book value, which is the value of the assets in the balance sheet, minus all the liabilities. It can also be stated as net assets of the company (there were no intangible asset during this time period that must be taken into consideration).

Market capitalization. Market capitalization, or just market cap, is the price or value of the whole company, measured as all the number shares multiplied by the price of one share. Summing up all the market caps the whole market cap of the Helsinki Stock Exchange can be calculated. As implied above, market cap is the present value of all discounted future profits.

Dividend. Dividend is a distribution of company's earnings, or de facto company's assets, to owners of its shares. Dividends can be paid in cash, stock or other property. Dividends are decided by the board of directors. It is assumed that dividends were paid once a year in the spring as is the custom nowadays as well.[99]

Nominal and effective dividend yield. Dividend percentage was usually stated as percentage of the nominal value of the stock. For example, a nominal yield of 10% for a stock whose nominal value was 500 marks a dividend of 50 marks was distributed. But nominal yield tells us only about the distribution on nominal capital. Effective dividend yield is calculated on the real value of the share. To continue the above–mentioned example, if the same company's share was priced at 1000 marks, then the

[99] See the same assumption in Nyberg and Vaihekoski 2009, p. 14. Also in Palmgren 1958.

effective dividend yield was 5%. Calculating the effective yield on stocks and the whole market is also an indicator to price levels: lower yield means higher share prices, should absolute dividends stay constant. Pay–out ratio tells how the dividend is compared to net income. The higher the ratio, the more company distributes its earnings to owners, instead of investing in the business or accumulate earnings for itself.[100]

Market cap to GDP. It is also interesting to compare the whole market cap of the Helsinki Stock Exchange to the GDP of Finland at that time. Even more interesting is the possible change in that relation over time. Market cap to GDP is an indicator for how important or large *rôle* the stock market played in the Finnish economy.[101] Market cap to GDP can also be used to gauge the overall price level of the market as company profits are one component of GDP. However, in as such a short time frame as in this paper, and also, thinking the limited *rôle* stock market had, this measure should not be given too much value.

Return on nominal book value. This study introduces a modification of Return on Equity –measure. When ROE is calculated as earnings divided by equity (equity being assets minus liabilities), nominal book value is as stated above. It lacks some components compared to book value but is the best available measure. Observing change in RONV is in this study's interest.

Behind RONV is a philosophy or way of thinking stocks as bonds: buying a stock is the same as buying one own share of book value of the company at a certain market price. Earnings are made by utilizing this book value as interest is earned by buying bonds (debt) of some entity.

4.5. Helsinki Stock Exchange during 1937–1947: The Market Under Siege

The most important question in this sub chapter is about the efficiency of HSE during the Second World War. As asked above, was HSE efficient enough to draw any conclusion about the tides of war? How well the companies included in the bourse

[100] Interestingly, nowadays dividend yield and effective yield are essentially the same thing in vernacular talk as dividend yields are only reported as effective yields.
[101] See long term comparison in Nyberg and Vaihekoski 2011, p. 22.

represented the economy as whole? However, first we take a brief tour through the history of Helsinki Stock Exchange prior the Second World War.

4.5.1. The Helsinki Stock Exchange revisited

The Helsinki Stock Exchange has its roots back in the 1860's when entrepreneurs situated in the capital formed an exchange of sorts, but activities were soon muted as the famine of 1866–1868 hit the poor and undeveloped country hard.[102] Trading was mostly halted. Moving to 20th Century, the Stock exchange was launched in 1912 as a formal institution, but trading was thin and the public was not used to selling or buying securities after a long break. Nevertheless, price quotes were established at least.[103] It is illustrating of the investors' information level of the time that, for example in 1914, industrial companies did not publish any information about their economic standing, income statements or balance sheets. Therefore, trading activity was focused on bank stocks that provided some light to their financial statements. Given the thin trading volume and very limited information, the Stock Exchange must have looked like some sort of Wild West. And soon it got its first wild ride.

Soon after the Bourse opening the First World War broke out. F. Tiderman's account of the time is interesting, because it highlights similar characteristics the market had had in the Second World War when it comes to flight–to–safety–effect[104], speculation and high inflation. The Stock Exchange followed the suit of global stock exchanges and was closed most of the time in the second half of 1914. As we remember from above, the war came as a shock to financial markets globally. The trading was continued in the spring of 1915. Because of the ravaging war across the globe, business activity was muted and there was not much need for capital spending leading to growing amount of unoccupied, idle capital. At the same time the supply of money was increasing. Finland was not a part of the front line in the First World War, but instead provided material to the struggling Russian Empire it was part of as an autonomy. This economic activity

[102] Tiderman 1937, p. 10–14.
[103] Ibid. p. 36–44.
[104] Common idiom to describe panic–like flight to safe–havens, though usually flight–to–safety means quite fast rotation from risk assets such as stocks to more safe assets such as bonds and cash.

and simultaneous inflation and weakening currency led to huge profits for businesses, providing fertile ground for stock market bull run, or *hausse*[105] as it was called that time.

By 1916 trading volume increased and the public interest towards equities was aroused. Stock prices surged and new companies listed to stock exchange in such a rate that similar number of companies listed in the bourse was reached only in the 1980's.[106] First delighted by the increased interest towards industrial companies, stock exchange officials warned that speculation would lead to no good and most rookie traders, using margin[107], did not have any idea of the fundamentals of the companies: they were only chasing fast profits. Interestingly, trading was halted during the civil war in the spring 1918 but the stock exchange continued trading after it with enthusiasm.[108]

The abundance of money that fostered equities during 1915–1918 was followed by a change in paradigm in the latter half of 1918. Monetary policy tightened and the Bank of Finland started lifting interest rates. Inflation peaked in 1921 and faltered after it. Margins were cut for stocks. Deposit rates rose from to–date record low of 0,5%. By 1924, many stocks reached their all–time–lows and the number of companies in the bourse were diminished.[109] While the evidence is anecdotal, it seems that the stock exchange was concurrently a place for speculation and a safe–haven to guard purchasing power from high inflation during the war, the very same attributes it attained during the Second World War.

In the latter half of the 1920's the stock exchange revived and made a new all time high in 1928, but started sliding after it, well before global rout starting in 1929. Finland left the gold standard early, following Britain in 1931 and escaped the worse of the Great Depression.[110] By 1937 the Stock Exchange had made a new record, but after that the skies were not that clear at all.

[105] Derived from Swedish, meaning "boom" or "prosperity".
[106] See number of companies in Nyberg and Vaihekoski 2014, p. 17.
[107] Trading with margin means using leverage provided by broker to buy more shares.
[108] Tiderman 1937, p. 47–59.
[109] Ibid. p. 78–94.
[110] See Fagerholm 2017.

4.5.2. Efficient market in the War Economy?

Based on the findings of Tiderman, the Bourse was characterized by swinging investor moods, speculation and sudden bull runs or "hausse's" as he frames it, followed by collapses. Investors seemed to act more on the historical price patterns of shares and rising share prices fed optimism about more price increases in the future, the so–called "greater fool" –game where investors buy shares only to sell them to someone else with even higher price. This same anecdotal evidence was also used by Nyberg and Vaihekoski.[111] Palmgren notes that even in the 1950's stock investing was regarded as "speculation" or not as the hobby of a common man.[112] Such claims one can occasionally hear even these days.

While it is unclear that how well informed investors were in reality, or could have been, it is still plausible to assume that at least the investors with the most money were informed and sophisticated agents in the market. It is unfortunate that in his later historical account, Tiderman does not describe the mood or quality of investing in the bourse during the World War II with much detail.[113] When the Bourse was launched, it did not have any ethical code of conduct and "hard game" was played. Insider information was used mostly impudently. Even respected bank CEO's took loans from other banks to participate in this game.[114] It is worth noting that even in one of the most sophisticated stock markets, the New York Stock Exchange, analytical approach to investing was still quite a new phenomenon though practiced already some time as noted above.[115] One must also consider the limited amount of information and tools the investors of the 1930's had in their reach. Financial statements were published yearly, not quarterly based on the observation that financial sources in this paper were only available on yearly basis, probably published ahead of the annual meeting usually held in the spring. Banks financial statements and condition were published monthly in

[111] See Nyberg and Vaihekoski 2011, p. 10.
[112] Palmgren 1958, p. 65.
[113] See Tiderman 1962, p. 11–20.
[114] Stjernschantz 1987, p. 50–51.
[115] A (value–) investing bible still today, Benjamin Graham's and David Dodd's classic Security Analysis was first published 1934, after the devastating bear market of 1929–1933.

Kauppalehti, so investors could have had accurate picture how business in banks was developing.[116]

It is important to concern the larger picture as well. The whole economy was under stress during the war period. Finland was not particularly well prepared for war in 1939. Forethought and ahead–planning was weak. During the summer 1939 several laws were imposed to improve crisis–readiness.[117] The Winter War was so short that it did not create extensive regulation or top–down–led production but The Continuation War brought Finland closer to a planned economy. By May 1941, Finnish economic landscape could be described as a centralized war economy, a mode that prevailed for the rest of the war.[118] The economy of the whole Europe was in a devastated condition during the war. At the height of Germany's reach of power in 1942, all financial dealings were concentrated in Berlin and resources of occupied territories, satellite states and Axis courtiers were harnessed for the German war machine.[119] Finland had to operate in this European new economic order until 1944 when she broke her alliance with Germany and all the economic ties were cut off, excluding Sweden. This could have affected businesses of many companies listed in the stock exchange too. The foreign trade was limited to mostly Germany during the period 1939–1944, limiting export prices but elevating import expenses.[120]

Other important aspect affecting the efficiency of the market was, of course, the tightening regulative environment and government intervention. As mentioned above, it was in the government's interest to harness all the available financial resources to finance the war effort. Flow of money to Bourse was against this imperative. Stamp tax rose on April 26th 1941 from 1% to 1.8% and subsequently to 4% in August 1941 where it stayed until 1949. Dividends were restrained but that had little impact on stock prices. Instead it meant that more real value such as monetary assets stayed in the balance sheets of companies, which attracted buyers. Capital controls were imposed, restricting

[116] Based on Kauppalehti 1.8–30.11.1939.
[117] See Pihkala 1982, pp. 317–333.
[118] Heikkinen and Tiihonen 2009, p. 205–218; Ahvenainen et al. 1982, p. 317–328. See also Nars 1966.
[119] Aldcroft 2001, p. 94–101. However, it seems that as a rule, Nazi Germany truly exploited only countries it had militarily occupied. See Ritschl 2001, pp. 324–345.
[120] For Finnish wartime economy, see also Numminen 1993, p. 262–264.

movement of capital over borders and limiting options where to allocate financial recourses. Taxes affected Bourse significantly and because of thin trading volume expiry dates affected share prices, Stjernschantz remarks. For example, in November 1943 "huge" taxes were expiring and UNITAS index, the only available stock index that time, slipped from June to October from 270 points to 210 points, or one–fifth when investors raised cash for the taxes. To tame speculation, the Bourse lifted transaction costs from 0.5% to 0.75% in the beginning of July 1943.[121] The government tried to cool down rising share prices by forcing 13 new companies to list in the Stock Exchange in May 1942. The list included well–known household names such as Stockmann and Rautatiekirjakauppa, the predecessor of Suomalainen.[122] It would be an omission to ignore interest rates too. However, during this period the basic interest rate by the Bank of Finland was flat at 4% for almost the whole period excluding 3.12.1934–5.6.1947 when it rose to 4.5% and 15.12.1947–5.2.1948 when it was subsequently lifted to 5.25%.[123] The Bank of Finland was subordinated to near–control of government and participated in the war effort to bolster savings, keep banking rates artificially low and channel money to war expenditures via war bonds.[124] In a free market, basic rate should steer other rates, and they were low indeed to finance wartime expenditures with cheap credit.[125]

Interesting curiosity during the period was Förvaltningskoncernen För Ersättningsaktier, nicknamed Holding Concernen. After the war, Finland had lost parts of its territories and many refugees lost their fortunes as well. The government decided to give financial compensation for all the evacuated refugees. Compensation meant smaller sums in cash or inflation–protected bonds, but larger sums with shares of Holding Koncernen. On October 1945, all the companies with taxable assets larger than 10 million old FIM were required to pay capital gain tax of 20% on taxable assets as company shares. These shares were transferred to Holding who soon owned 20% of major Finnish companies

[121] Stjernschantz 1987, p. 80–83.
[122] See Kantanen 2012.
[123] https://www.suomenpankki.fi/globalassets/fi/tilastot/korot/documents/peruskoron_muutokset_fi.pdf. Accessed 4.2.2017.
[124] See Kuusterä 2012, pp. 36–50.
[125] The interest of 4% was the lowest basic rate since the end of the 19th Century. Interest rates can be viewed as substitutes to earnings yield offered by stocks. In this case however, interest rates were pushed artificially low so real comparison between those two is meaningless. Nevertheless, as a rule of thumb, stocks should offer higher yield than risk–free interest rates.

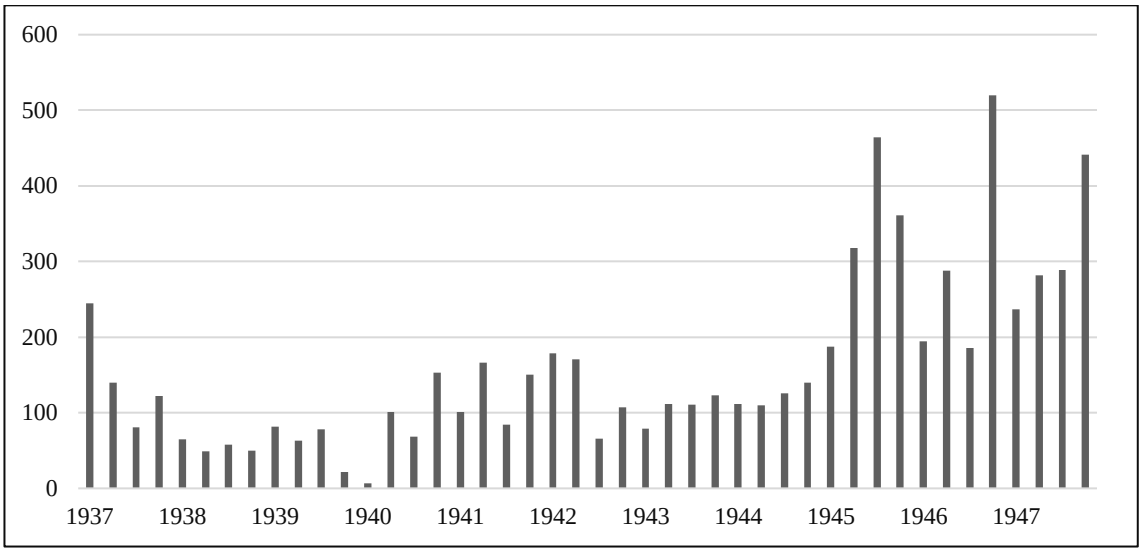
and had initial nominal book value of 4.3 billion old FIM (approximately 13% of the value of the whole the Finnish stock market according to authors calculation). Refugees received the shares and yearly dividends, but many sold them to investors right away. Holding became the most traded stock in the Bourse for few years after the war.[126]

It is imperative to concern trading volume as well. There were several interruptions in trading during the time period under concern. Trading was halted after the German invasion of Poland 1.9–4.9.1939 and then 10.10–22.11.1939 as tensions rose with Soviet Union. During the Winter War the stock exchange was closed altogether 30.11.1939–31.3.1940. The break can clearly be seen in the first quarter of 1940 in the cart below. After that trading continued as normal.[127] Trading volume rose especially after the war, but diminished value of money must be taken into account as well. As can be seen from the deflated and indexed trading volume chart, the real money value of volume peaked in the first quarter of 1937 and stayed approximately at one–fifth of that level the rest of the period. Some companies were more liquid than others. See the quarterly volume on chart 1 in millions of old FIM and as WSP–deflated index in chart 2.

[126] Kantanen 2012, p. 116–119.
[127] Stjernschantz 1987, p. 78.

Chart 1. Quarterly Trading Volume in HSE 1937–1947

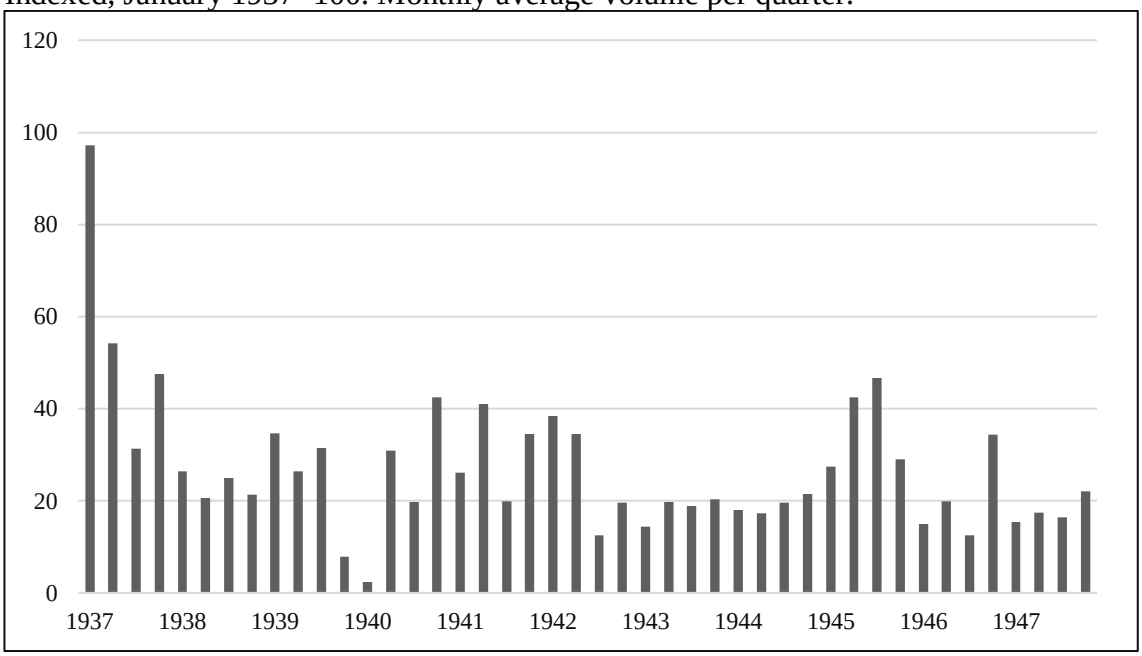
Millions old FIM



Source: UNITAS yearbooks 1937–1947.

Chart 2. Quarterly WSP–Deflated Trading Volume in HSE 1937–1947

Indexed, January 1937=100. Monthly average volume per quarter.



Source: UNITAS yearbooks 1937–1948.

For example, Industri–Hypoteksbanken had only a few price quotes during the whole time period. But on aggregate, the stock exchange remained functional and traded during the whole course of war, excluding the abovementioned exceptions.

4.6. Companies in the Helsinki Stock Exchange

Below is the list of all listed companies in an alphabetical order in the Helsinki Stock Exchange during 1937–1947. The total number of companies was 54 while 35–50 companies were listed simultaneously. Firms are coded as "1" when they were listed and "0" when not. If they were listed or delisted during this period, the time of the event is mentioned. Companies whose earnings are missing in fiscal year 1946 are marked with a star * and Holding Concernen is marked with two stars ** as it had no earnings available too and performed as a holding company. Holding Concernen became the most traded stock in the exchange after the war.

Table 1. Companies Listed in HSE during 1937–1947

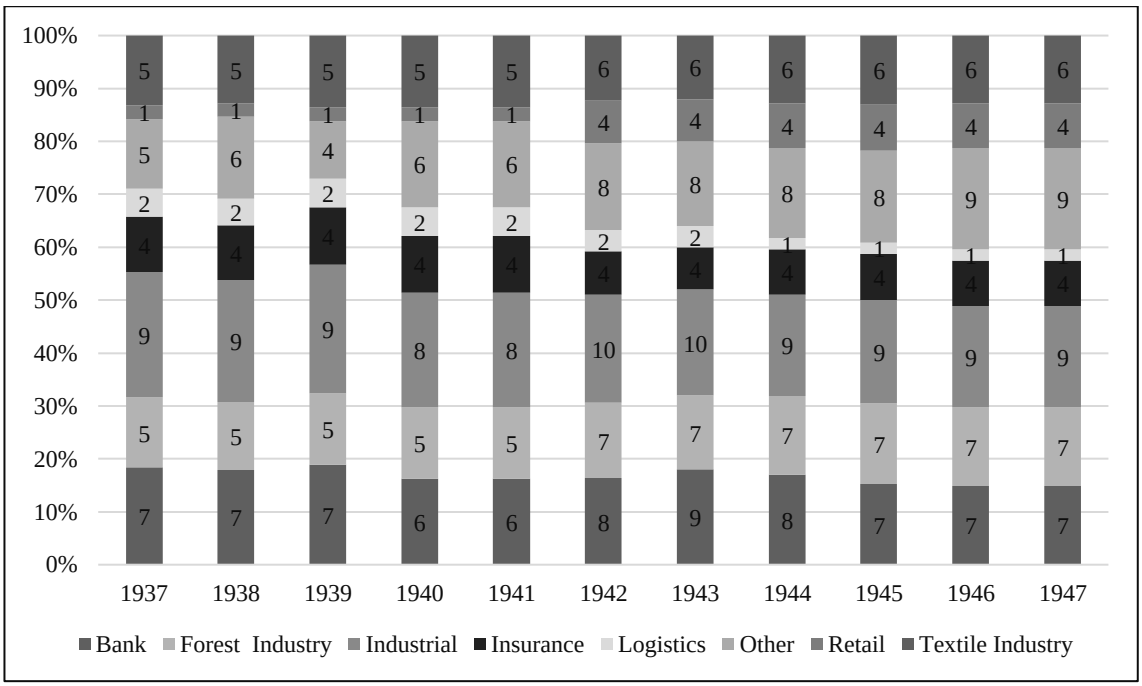
#	Company	Listed	De-listed	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
1	Arabia			1	1	1	1	1	1	1	1	1	1	1
2	Brandförsäkrings A.B. Fennia			1	1	1	1	1	1	1	1	1	1	1
3	De Förenta Ylefabrikerna stam			1	1	1	1	1	1	1	1	1	1	1
4	Enso-Gutzeit	21/04/1943		1	1	1	1	1	1	1	1	1	1	1
5	Fastighetsbanken, g		28/12/1944	1	1	1	1	1	1	1				
6	Ferraria			1	1	1	1	1	1	1	1	1	1*	1
7	Finlayson & Co AB			1	1	1	1	1	1	1	1	1	1*	1
8	Finska Gummifabriks AB			1	1	1	1	1	1	1	1	1	1*	1
9	Finska Sjöförsäkrings A.B.			1	1	1	1	1	1	1	1	1	1	1
10	Finska Ångfartygs AB			1	1	1	1	1	1	1	1	1	1	1
11	G.A. Serlachius	07/05/1942							1	1	1	1	1*	1
12	Handtverk. Aktiebank		Feb-45	1	1	1	1	1	1	1	1			
13	Helsingfors Aktiebank AB			1	1	1	1	1	1	1	1	1	1	1
14	Helsingfors Magasins AB		28/12/1944	1	1	1	1	1	1	1				
15	Helsingin pantti	31/12/1940		1	0		1	1	1	1	1	1	1*	1
16	Helsingfors pantlåne AB	31/12/1940		1	0		1	1	1	1	1	1	1	1
17	Helsingin rakennusainekauppa			1	1	1	1	1	1	1	1	1	1*	1
18	Holding koncernen	29/10/1946											1**	1**
19	Hämeenlinnan Verkatehdas Oy	07/05/1942							1	1	1	1	1*	1
20	Industri-Hypoteksbanken	25/06/1943								1	1	1	1	1
21	J. Stenbergs Maskinfabrik	31/05/1937		1	1	1	1	1	1	1	1	1	1*	1
22	Jakobstads Cellulosa	07/05/1942							1	1	1	1	1*	1
23	Kajaanin puutavara Oy			1	1	1	1	1	1	1	1	1	1	1
24	Kansallis Osake Pankki			1	1	1	1	1	1	1	1	1	1	1
25	Kaukas Fabrik	26/08/1943								1	1	1	1*	1
26	Kemi Trävaruaktiebolag			1	1	1	1	1	1	1	1	1	1*	1
27	Kuitu Oy	07/05/1942	29/12/1944						1	1				
28	Kustannus Oy Otava	07/05/1942							1	1	1	1	1*	1
29	Kymmene stam			1	1	1	1	1	1	1	1	1	1	1
30	Lojo Kalkverk			1	1	1	1	1	1	1	1	1	1	1
31	Nokia stam			1	1	1	1	1	1	1	1	1	1	1
32	Palovakuutus OY Pohjola			1	1	1	1	1	1	1	1	1	1	1
33	Pargas Kalkbergs			1	1	1	1	1	1	1	1	1	1	1
34	Pohjolan OP			1	1	1	1	1	1	1	1	1	1	1
35	Rautatiekirjakauppa	28/05/1942							1	1	1	1	1*	1
36	Savo-Karjalan Osake Pankki		01/04/1940	1	1	1								
37	Stockmann	07/05/1942							1	1	1	1	1	1
38	Strengberg			1	1	1	1	1	1	1	1	1	1*	1
39	Strömberg			1	1	1	1	1	1	1	1	1	1*	1
40	Suomen Maanviljelijäin Kauppa O	07/05/1942							1	1	1	1	1*	1
41	Suomen Maatalous Osakepankki	07/05/1942							1	1	1	1	1	1
42	Suomen Trikootehdas			1	1	1	1	1	1	1	1	1	1*	1
43	Tammerfors Klädesfabrik	07/05/1942							1	1	1	1	1	1
44	Tammerfors Linne & Jern Man			1	1	1	1	1	1	1	1	1	1	1
45	Tapaturma OY Kullervo			1	1	1	1	1	1	1	1	1	1	1
46	Teräs Oy	07/05/1942	28/01/1943						1	0	0	0	0	0
47	Vasa Bomull	07/05/1942							1	1	1	1	1*	1
48	Wasa Ångkvarns		Dec-40	1	1	1	0							
49	Wärtsilä OY AB			1	1	1	1	1	1	1	1	1	1	1
50	Yhtyn. Paperitehdas			1	1	1	1	1	1	1	1	1	1*	1
51	Ålands Aktiebank	07/05/1942							1	1	1	1	1	1
52	Suomen Sokeri			1	1	1	1	1	1	1	1	1	1	1
53	Pohjoismaiden Yhdyspankki			1	1	1	1	1	1	1	1	1	1	1
54	Ford	01/06/1938			1	1	1	1	1	1	1	1	1	1
	*Missing earnings data.			37	36	36	36	36	49	50	47	46	47	46
	**Holding Konsernen has no financial results.													

Source: Vaihekoski and Nyberg 2009 and Kock http://www.porssitieto.fi/ (accessed 15.2.2017).

As the chart 3 below states, the bourse represented many sections of the Finnish economy. Industrial companies such as Wärtsilä or Finska Gummifabriks were the most

numerous with nine to 11 companies, or around one quarter of all the companies in the HSE. When the famous forest industry, with companies such as Yhtyn. Paperitehdas (United Papermills), Kemi or Enso–Gutzeit, is included their share of all companies rise to around one third. Financials was another important sector with six to nine banks and four insurance companies representing together around one–fifth of all the companies.

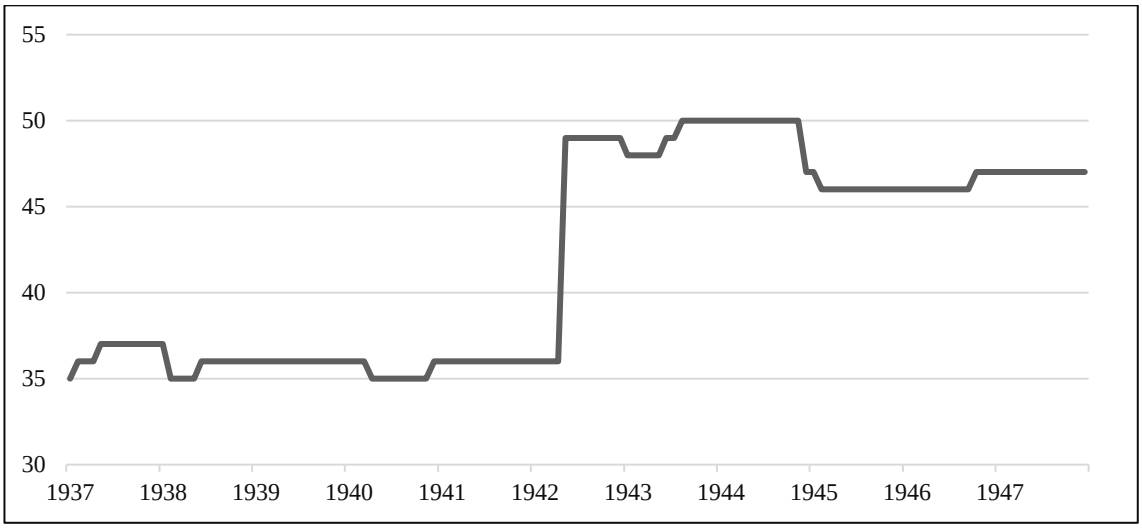
Chart 3. Companies Categorized in HSE 1937–1947



Companies categorized to bank, forest industry, industrials, insurance, logistics, retail, textile industry and the other by the author.

As the chart 4 below shows, the number of companies was quite stable during the first half of the period under concern. It rose during May 1942 as the government forced 13 new companies to be listed in the bourse in order to contain speculative price development by increasing supply of shares. After this intervention, some companies left the Bourse as they went out of business.

Chart 4. Month–end Number of Companies Listed 1937–1947



Source: Vaihekoski and Nyberg 2009.

It is yet important to observe how many large companies were represented in the stock exchange to gauge how important bellwether the Bourse was for the economy. As shown above in table 2, different business categories, especially banks and industrial companies, were well represented.

Table 2. Market cap to GDP 1937–1947

HSE Market Cap to GDP

Billions, old FIM	GDP nominal	Marketcap	HSE mcap to GDP
1937	36	7	18 %
1938	38	7	17 %
1939	37	6	16 %
1940	43	7	16 %
1941	53	10	19 %
1942	66	14	22 %
1943	84	15	18 %
1944	95	14	15 %
1945	146	29	20 %
1946	219	30	14 %
1947	297	27	9 %

The market cap of HSE can be compared to GDP to gauge the importance of the stock market, too. As the table shows, the market cap was less than fifth of the nominal value of GDP during the time period, underlining the small rôle of Finnish stock market in the Finnish economy. Source: For GDP, Statistics of Finland. Author calculations based on Vaihekoski–data.

Hjerppe has listed the 34 biggest industrial companies in Finland during 1938.[128] She has ranked them by the number of employees. In the above table companies are ranked by the value of their nominal book value, since it is usually more stable measurement compared to market cap or volatile earnings. Kymmene, Enso–Gutzeit and Suomen Sokeri stand in the league of their own when comparing nominal book values.

As can be seen below in table 3, out of 34 biggest companies 16 were listed in the stock exchange. More important, six of them is included in top 10. The most important Finnish companies

Table 3. The Biggest Industrial Companies in HSE 1938

Biggest Industrial Companies in Finland 1938	Ranked by employees (Hjerppe)	Employees	Gross production value, million old FIM	Nominal book value*	Market Cap, million old FIM*
Kaukas Fabrik	16	1867	236	-	-
Vasa Bomull	21	1463	67	-	-
Kymmene Stam	6	3697	839	350	718
Enso-Gutzeit Oy	2	4702	769	324	732
Suomen Sokeri	25	1067	420	300	500
Wärtsilä Oy	1	5938	506	192	125
Pargas Kalkbergs	20	1593	234	190	386
Finlayson & Co AB	3	4498	226	160	243
Tammerfors Linne & Jern Man	4	4410	367	160	340
Kemi Trävaruaktiebolag	22	1433	277	150	203
Yhtyneet Paperitehtaat	15	1883	459	135	270
De Förenta Yllefabrikerna Stam	14	1932	116	68	50
Finska Gummifabriks AB	10	2163	182	63	257
Suomen Trikootehdas	12	2096	125	54	119
Arabia	17	1824	91	32	32
Strömberg	27	1006	80	12	25
*If listed to HSE during 1938, values year end.					3998

Source: Hjerppe 1979.

are well presented in the stock exchange, it could be said. The biggest banks such as KOP and Pohjoismaiden Yhdyspankki are not included, but they had market caps of FIM 711.3 and FIM 915.6 million, respectively and nominal book values of nearly FIM

[128] See Hjerppe, Riitta: Suurimmat Yritykset Suomen Teollisuudessa 1844–1975. Societas Scientiarum Fennica, Helsinki 1979, p. 174.

250.0 and FIM 280.0 million. The total market cap of Finnish stock market in 1938 stood at FIM 6.7 billion, so these 16 biggest companies represented almost 60% of the whole market cap (Kaukas Fabrik and Vasa Bomull are not included since they were not listed during 1938) and including the two biggest banks biggest companies the 18 biggest companies occupied 84% of the whole market cap of HSE.

5. The Finnish Equity Market in the Second World War: Geopolitical Crisis from Investor Perspective: The Analysis

The analysis section delves into Helsinki Stock Exchange performance during the Second World War. This paper has already illustrated the larger context, the theoretical and methodological concepts behind this study and the material used. Regulatory and war economy environments have been briefly touched as well. This section walks chronologically through the turbulent period of 1937–1947. Earnings and earnings multiples derived from them are discussed and utilized when analysing investor returns. The conclusion will follow.

5.1. The Stock Market and Rising Awareness of Geopolitical Risks: Autumn 1939.

Nominally, the Finnish stock market had seen whipsaw movement after the market peak in the autumn 1937. In 1937, the United States slumped to yet another recession after a decision to withdraw from public stimulus policy supporting the fragile economy. Geopolitical tensions were rising when Japan invaded China after the Marco Polo bridge incident that rapidly escalated into full–scale onslaught. Back in Europe, the Finnish stock market headed -15% lower during September 1937 to March 1938, when Anschluss, Germany's annexation of Austria, occurred. Stjernschantz remarks that trading got more thin during "these agitated times as buyers and sellers were confused". Industrial companies fared better than banks and forest industry and actually, some

companies made new all–time–highs in the summer 1939. Expectations about looming catastrophe caused fear, but the state of denial was dominating.[129]

The financial newspaper Kauppalehti painted a somewhat mixed view on the looming war. On the other hand, at least the war between Germany and Poland must have been well seen before hand. On the August three, the speech of Danzig's Governor was cited in Kauppalehti, telling "We Danzigians wish nothing so much but the German Navy to enter our harbour permanently".[130] On 22nd August Kauppalehti had a large citation from London, saying "the War is inevitable" after the Russo–German non–aggression pact that created confusion around the world as Soviet Union had been negotiating with the Western powers in the summer. Other citation said "The fate of Poland is sealed" and the third "After Poland, it is the turn of Western powers".[131] Still, the daily index had been trading in a few percent point range during the whole August.

An abrupt change came 24th August when the daily index slided -1.19% as the Molotov–Ribbentrop–pact was signed. It seems that, as Stjernshantz remarks, investors were in a state of confusion and waited for further evidence on how the political landscape was to evolve in Central Europe. On August 25th, the daily index slid -2.02%. The Finnish Government bond yields started climbing at the end of August, echoing uneasiness among the ranks of investors.[132] On Monday 28th August, the Hitler's ultimatum to Poland became public and Kauppalehti headline ingress cited the German demand that "Danzig and land connection (East–Prussia) to Germany; Macedonian living conditions for German living hoods in Poland must be stopped."[133] German army invaded Poland with overwhelming land and air power in the early morning of 1st September, unleashing the Second World War in Europe.

The Second World War was not a surprise but more like a "long–anticipated event" to contemporary observers in Europe.[134] But contemporaries could not have known for sure. In Finland, it seems that the public was caught by surprise that how fast the

[129] Stjernschantz 1987, p. 73.
[130] Kauppalehti 3.8.1939, MF 70422.
[131] Kauppalehti 22.8.1939.
[132] Waldenström and Frey 2007, p. 31.
[133] Kauppalehti 28.8.1939. The German over friendly tone of Kauppalehti raises eye browns.
[134] Ferguson 2008, p. 462.

conflict escalated. The CEO of Pohjoismaiden Yhdyspankki, the largest company by market cap in the HSE during that time, said in September that "the looming crisis, assuming political catastrophe will be avoided, is probably not as deep nor as escalated as the previous one". The optimism of the late 1930's rising living standards and economic growth might have affected the line of thought behind the statement.[135] It seems that the optimistic view that Finland would not be a target for belligerent actions was widespread. A history of Suomen Sokeri (the Finnish Sugar Company) states that "the management of Suomen Sokeri was as surprised as the common man on how fast global political landscape turned dark" in the late 1930's.[136] The threat of war seemed so remote in Finland that even fertilizer production, a very essential part of running agriculture dominated economy, was not prepared for exceptional tail events nor the reserve stockpile was adequate in the event of war.[137] When negotiations with Moscow ended in cul–de–sac, the possibility of war was still seen as remote, even though some Finns were and had been for long very sceptical of the true intentions of Soviet Union.[138]

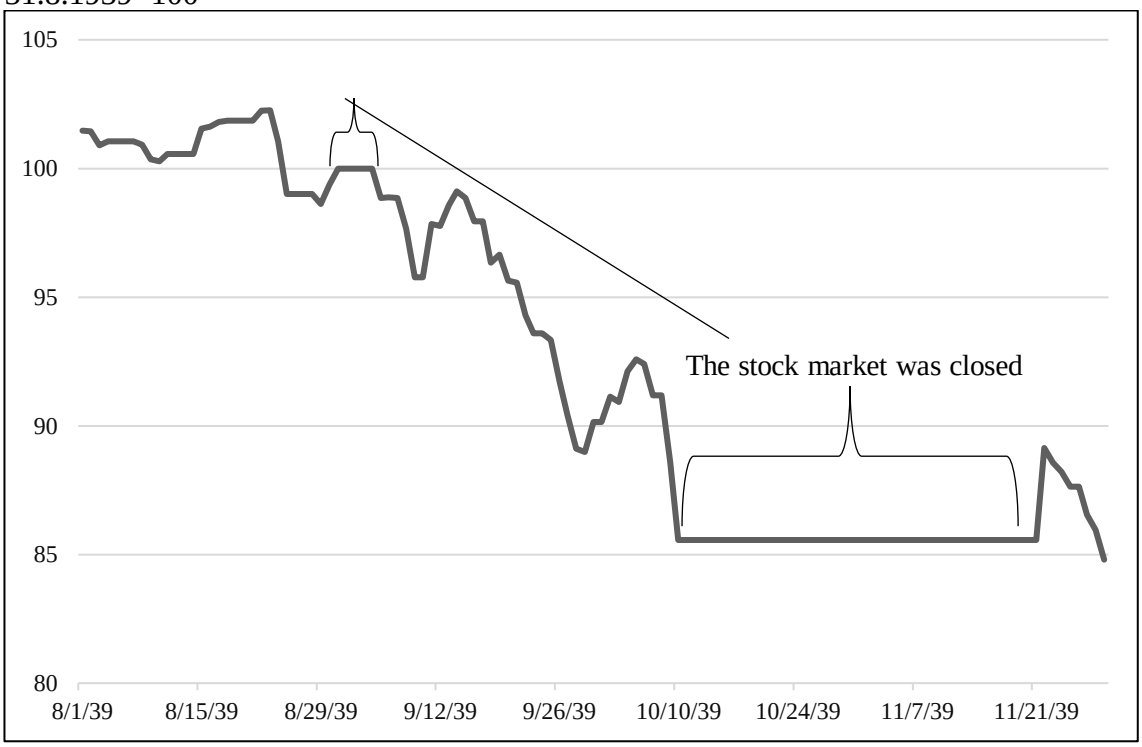
While the official writing of history says the war was seen as unlikely, the stock market reacted with almost a panic–like mode when the actual fighting began, see the chart 5 below. The stock market was closed in Finland from 1st September to 4th September, but opened on the 5th day again, only to continue sliding by -1.14% with "a tranquil mood but rising interest from public".[139] It is interesting to note a contradictory in that Kauppalehti stated most industrial companies reached new all–time–highs, a movement not captured by the daily index in this study. After that, a few days passed with no movement whatsoever and then on 8th and 9th September it reached a bottom for few days. The daily index was down -4% since the beginning of German invasion. By the end of September, as it was becoming clear that the war would affect foreign commerce and business relations, the daily index was down -11% from 31st August bids. Also, the rising Finnish bond yields after the break out of war on 1st September pointed out for the heightened risk of war. The bond market was anticipating trouble at least from that

[135] Stjernschantz 1987, p. 73–74.
[136] Suomen Sokeri Oy: Suomen Sokeri Osakeyhtiö 1918–1968. Frenckellin Kirjapaino Oy, Helsinki 1970, p. 8.
[137] Seppälä 1995, p. 161–166.
[138] Tarkka 2010, p. 39.
[139] Kauppalehti 5.9.1939.

point on, months ahead of the Winter war.[140] On 10th October The Finnish Government called for reservists to enlist, de–facto mobilizing Finland's defence. Stocks in the daily index slid, bringing the index down more than -6% on 9th and 10th October after which the trading in the stock exchange was suspended. The index was down -14% from the beginning of Germany's invasion of Poland. It could be argued, based on the evidence illustrated by movements in the index, that the Finnish stock market was startled by the beginning of the war, and interestingly, anticipated that Finland would be drawn into war. This argument is well in line with Waldenström and Frey who have argued that Finnish government bonds anticipated a growing risk of war from late August as well.[141]

Chart 5. Equally Weighted Daily Index 1.8–30.11.1939

31.8.1939=100



Source: authors construction based on bid prices in Kauppalehti 1.8–30.11.1939. An equally weighted daily index. The stock market was clearly aware of the rising risk of the war. Crucial date marked with explosion figure, marking the announcement of Molotov–Ribbentrop Pact, Invasion of Poland, mobilization of reserves and the beginning of the Winter war.

[140] Waldenström and Frey 2007, p. 17.
[141] Ibid., p. 20.

The stock market was closed for six weeks when Finland was negotiating with Soviet Union. Market opened on 22nd November and rallied 4.19% that day. Kauppalehti commented briefly that "stocks rose broadly and the mood was calm".[142]

However, after the brief relief rally the daily index dive again to achieve new lows on 29th November, a level almost one–fifth lower compared to end of August. When the Red Army crossed the border on 30th November, the stock exchange was closed and stayed that way for the whole Winter War. A Kauppalehti headline told that "The Soviet Union has broken the peace" and "the mood is calm and determined in the whole country".[143] It is noteworthy that the situation was still unclear for the political elite. The sitting government wondered the very same day if Finland should declare a state of war when the meeting was interrupted by Soviet bombers flying over Helsinki.[144] The Finnish colonel Wolf H. Halsti formulated that "it is unfortunate… that policymakers lacked the capacity to see what was coming and the capability to prepare in a way that was supported by the facts… the government could not foresee the war but staggered into it blindly."[145] While policymakers were perhaps "blind to facts", it seems that the market was discounting war since the announcement of Molotov–Ribbentrop pact. It is of course very hard to tell that was the market discounting more a harsh business environment, as the global trade started to suffer from the war, or were stocks seen as riskier investments because of direct threat of war pointing to Finland. In its annual statement, Pohjoismaiden Yhdyspankki complained that blockades raised by the belligerent states caused much trouble for maritime trade and "the treacherous attack by our big eastern neighbour" further escalated these problems.[146] The trade was severely reduced with Western powers after the German invasion of Poland, but during the Winter war trade was restricted to Sweden as Germany was still with warm relations with Soviet Union.[147]

A glance to pricing of stocks could offer some insight here. P/E hovered approximately

[142] Kauppalehti 22.11.1939.
[143] Kauppalehti 30.11.1939.
[144] Polvinen, Tuomo: J.K. Paasikivi: Valtiomiehen Elämäntyö 3 1939–1944. Werner Söderström Osakeyhtiö, Helsinki 1995, p. 64–65.
[145] Wolf H. Halsti: Aika vaatii veronsa. Muistelmat 2. 1939–1948, Keuruu 1974 p. 49.
[146] Pohjoismaiden Yhdyspankki, Annual Statement 1939, Helsinki 1949, p. 3.
[147] Kuusterä and Tarkka 2012, p. 55.

in the range 17–18, depending if one looks at the average or the market cap weighted ratio (see chart). On July 1939, the average was 17.1, that is 11% percent more than the average (of average P/E) during January 1937 till November 1939 of 15.4. However, it reversed back to the average at the end of November 1939 which implies that businesses were seen more riskier investments than in the summer. While it sounds like a no–brainer itself, this kind of reasoning is something that has not been used before in historical studies and it gives precious insight in how stocks were priced during that time and what sort of factors were the primus motor behind price moves.

The average dividend yield was 5.69% on November versus the average of 4.95% during January 1937 to November 1939, implying that investors wanted more yield to compensate the heightened risk scene. Finnish Government bonds offered similar yields of bit less than 6%, rising from 5% just before the war. It seems that at this point investors were still quite happy to hold more riskier stocks even if bonds, those preferred investment vehicles of gentlemen[148], offered very similar return. Financial markets were expecting trouble ahead for Finland since the end of August and beginning of operation Fall Weiss (German Poland–offensive). In case of belligerent Germany, it seems that her fate was anticipated very early. It is interesting to note that by observing bond price movements in the Swiss Bourse, Frey and Kucher conclude that "The Second World War was from the very beginning considered to be a losing enterprise for Germany and a deadly threat to German public foreign debt –quite in contrast to the gains in land, resources and power that the Nazi leaders promised their subjects."[149]

5.2. The Unstable Interim Peace and the Flight–For–Safety

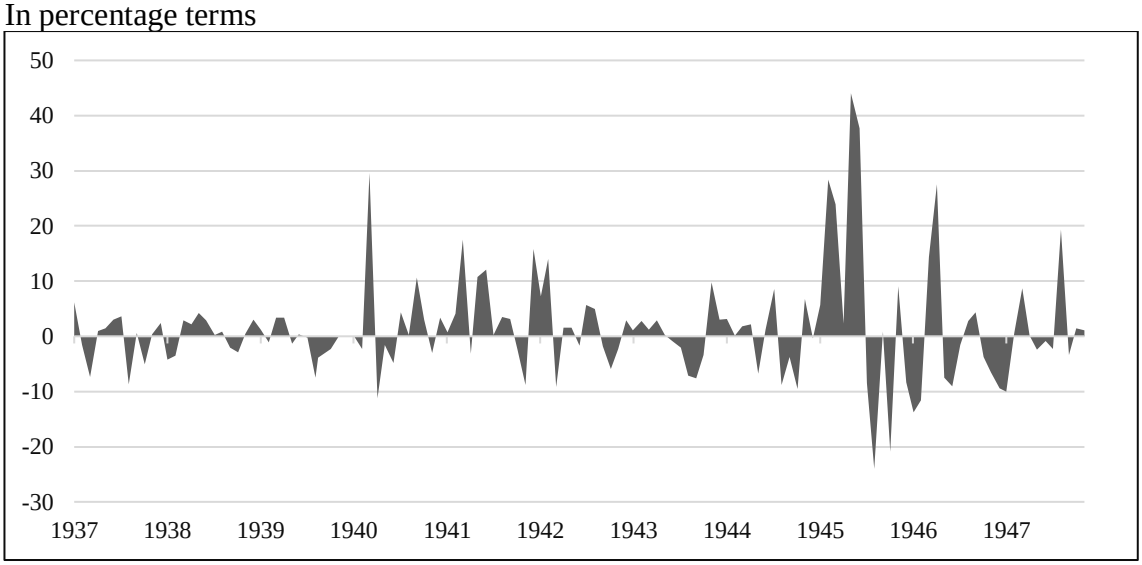
Winter war ended in the Interim Peace, lasting from 13th March 1940 till 24th June 1941 when Finland aimed to recover the lost area, around one–tenth of her surface area, from Soviet Union. The simultaneous German strategic aim was to annihilate the whole Soviet Union via the infamous Operation Barbarossa. The volatility spiked after the Bourse was re–opened on 1st April 1940 as seen in Chart 6. April 1940 was the third

[148] As quoted in Marilyn Monroe film Gentlemen Prefer Blondes, 1953.
[149] Frey and Kucher 2001, pp. 317–333, p. 332.

volatile month when the index rose by 30%. The position of Finland was unclear after the Winter War. The German occupation of Denmark and Norway made it increasingly clear that strict neutrality was out of question in German–occupied Europe and Finland would have to align herself with Nazi Germany which happened in late 1940. Soon Finland was included militarily in plans related to Operation Barbarossa.[150] Germany also needed raw materials from Finland and for example around third of wood imports to Germany were exported from Finland.[151] This could have affected the demand for products of some Finnish companies.

Chart 6. Monthly Change in the Finnish Stock market 1937–1947

In percentage terms



Source: Nyberg and Vaihekoski 2009.

After the dramatic volatility, the stock market consolidated during 1940–1941 and started to heal its losses taken during previous years. A flight–to–safety effect can also be seen. While economy suffered lack of goods, Bank of Finland monetized debt to provide purchase power for the Finnish war machine, a move that unravelled into higher prices. As mentioned above, stocks are believed to protect from inflation. While short term speculation was curtailed effectively by raising taxes on stock trading, restrictions on the companies ability to pay dividends led to increasing book value per share when companies made profit. That of course attached attention of investors who sought a safe

[150] Kirby 2006, p. 221–222.
[151] Heikkilä 1983, p. 42–44.

place or profitable opportunities for their money.[152] The movement is rational from investors' or savers' perspective, since in a closed economy, where else the money could go unless to the stock market if capital movements are blocked.

The beginning of operation Barbarossa was taken positively in the stock market which can clearly be seen in the index. The Finnish stock market seems to reflect quite perfectly the evolving strategic situation in Europe. From June 1941 to April 1942 it rose approximately 14% in real terms and 37% nominal terms, almost to levels seen before the Winter War (in real terms). In nominal terms, it almost tripled from the end of Winter War till the spring of 1942. By April German Ostfront managed to repel the Russian Spring counter–offensive and Rommel turned the tide in North Africa for a while. The Imperial Navy and Army of Japan had seized the control of almost all British and Dutch colonies and controlled the Pacific Sea for a moment. After that, the index started to decrease slowly. It is possible that the stock market in Finland expected the Axis victory, at least in the Eastern Front, till the spring of 1942. At the beginning of operation Barbarossa, the German High Command and many others had expected the same. Soviet losses were so huge and Wehrmacht's advance so fast that German chief of the OKH General Staff Franz Halder marked in his diary, a bit prematurely, that "probably it is not an overstatement to say that Russian resistance will be crushed in two weeks" in July 1941.[153]

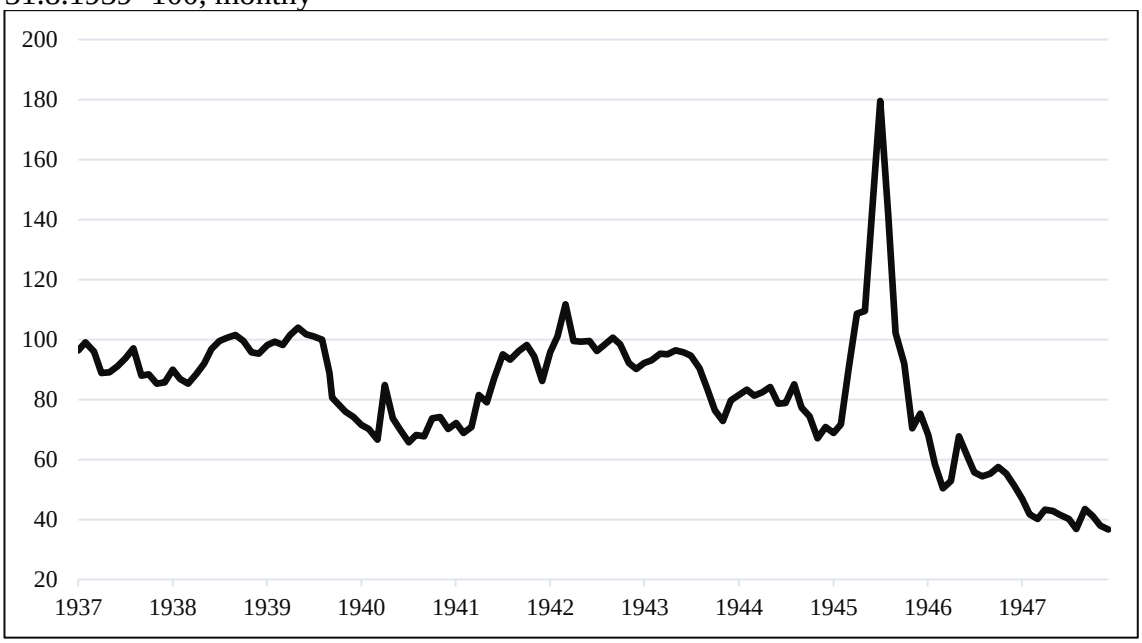
The above–mentioned conclusion is alluring, but it leaves lot of room for speculation. Though it could be plausible to think that Axis victory would have been compelling to Finnish Companies and Bourse in general, after the bull run to spring 1942 highs the market remained volatile but did not move into any direction. By looking at the pricing of the market (see below) we know that valuations were stretched and stocks must have

[152] Stjernschantz 1987, p. 78–80.
[153] Cited in Braithwaite 2007, p. 205.

looked less compelling in terms of future investment returns. See chart 7 for stock market performance.

Chart 7. The Finnish stock market: Nyberg and Vaihekoski Total Return Index Performance, deflated with WSP Index 1937–1947

31.8.1939=100, monthy



Source: Nyberg & Vaihekoski 2009.

As mentioned above, the huge tax payments affected the market when investors were forced to raise cash. Therefore, the downward slopes are hard to see as the financial commentary on Finland's war fortune. Instead, it is probable that from 1941 and 1942 onwards, the stock market was more about flight–to–safety effect protecting savings from inflation, rather than pure play fundamental analysis based investing in a long time frame.

The year 1944 is one of the "turning points" in the history of Finland.[154] The independence of Finland was highly uncertain when Soviet Union launched a major offensive in the Karelian Isthmus 9.6.1944 and advanced rapidly to Vyborg which fell in 20th June. The stock market slid in June, probably mirroring the worsening situation at the front: the index fell 6.8% but rose back in August as it became clear that Soviet

[154] Meinander 2009. p. 7.

offensive was stalled. In the beginning of June, the ever Germany–toady Kauppalehti informed investors about the upcoming Allied landing operation in France, and when it eventually materialized on 6th June, about its difficulties as if the Allied invasion stalled outright on the beaches of Normandy.[155] Soviet invasion in Karelian Isthmus was only briefly mentioned on 10th June, probably because of censorship and limited information, but following days it occupied the frontlines along with war news from intense hedge–hog fighting in Normandy.[156] The credit for the downward slide in the Bourse was given to "recent military events", referring to Soviet invasion against surprised Finnish defences.[157]

The armistice was negotiated in September after Finland managed to fend off the Soviet offensive. Political situation was highly uncertain because Lapland was occupied by German soldiers and the Soviet Union's policy towards Finland was yet to take its new shape and direction.[158] From August to November 1944 the stock market lost fifth of its nominal value, but speculative boom resurrected by the beginning of 1945 as inflation spiralled and supply of money was plenty. The sequential speculative boom and the 'danger years' are discussed later with more detail.

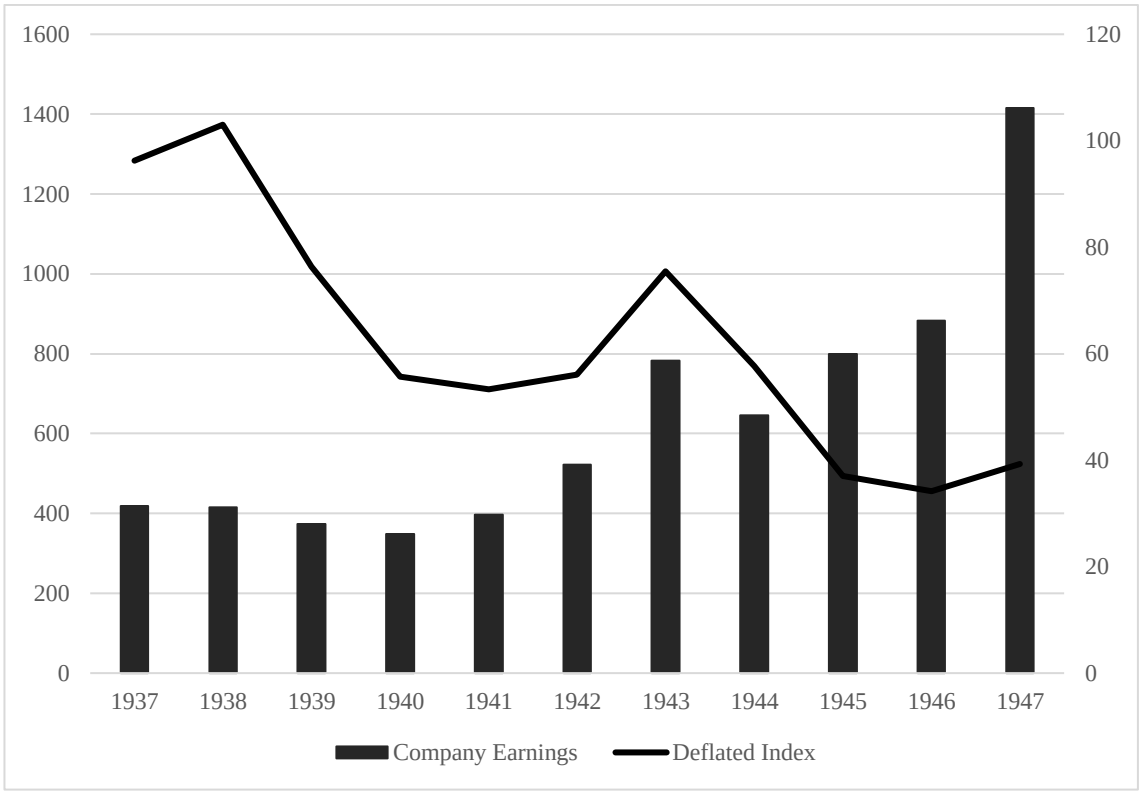
5.3. Comments on the earnings of companies listed in the Helsinki Stock Exchange.

One of the main targets of this paper is to collect, analyse and establish time–series for companies listed in the stock exchange. This information is crucial when judging how investors perceived stocks as investments and how they priced them during this period. Consider a historian looking at rising stock index without any knowledge of underlying profitability of the companies in the index. How could she or he make any assumptions why the stock market rose? Or, at least knowing the fundamentals can help to greatly reduce the level of speculation as history never shows us all the dark corners.

[155] Kauppalehti. 7.6.1944. The biggest amphibious (and airborne) landing operation in history, and quite successful: less than one year later, there were no Third Reich anymore.
[156] Kauppalehti 10.6.1944.
[157] Kauppalehti 13.6.1944.
[158] Kirby 2006, p. 232–233.

Chart 8. Yearly Company Earnings in HSE at year end, 1937–1947

Millions old FIM (left axis) and indexed and deflated with WSP, right axis, January 1937=100



Source: authors calculations. See primary sources. Note that some earnings are missing from the year 1946 as noted above.

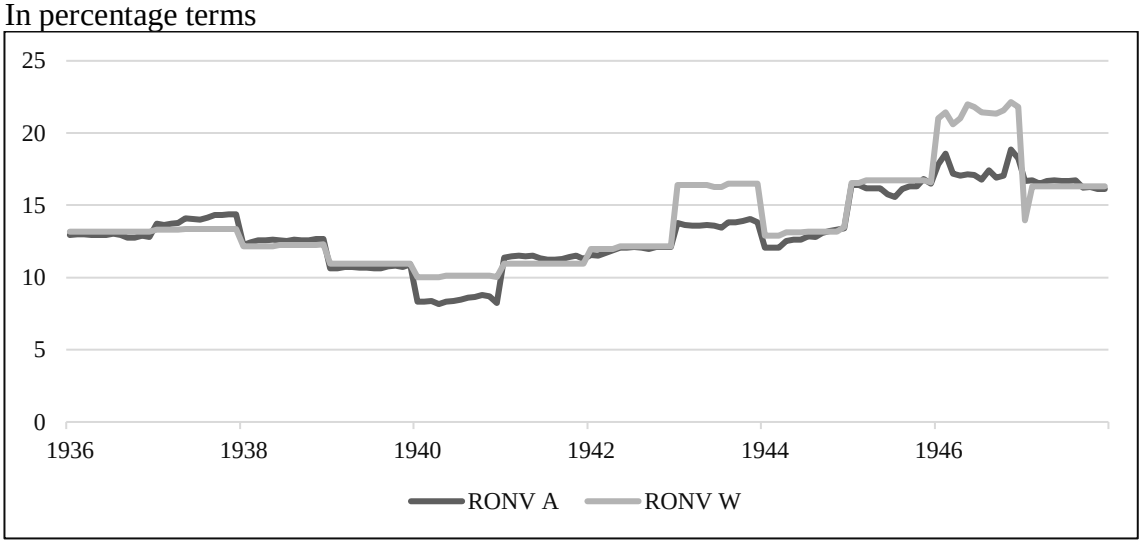
As can be seen from the chart 8, without calculating in the inflation, company earnings rose from around 400 million old FIM in 1937 to 1.4 billion old FIM in 1947. It is in place to remind the reader about partially missing earnings in 1946.[159] However, as the indexed number tells us, when counting in the diminished value of purchasing power, company earnings in 1947 were over 60% less in real terms than in 1937. It is important to note that company listings add up to amounts, but their effect should be limited. The spike in 1942 can be however partly explained by newcomers in the stock exchange, but the effect is small since most of the companies forced to list were smaller in size.

[159] Had the missing earnings been the same as in 1945, the earnings sum "missing" is approximately 248 million old Finnish marks, or around one–third compared to that year earnings of 883 million marks. Together these numbers would be around 1.1 billion marks, so the earnings jump in 1947 would look less dramatic but still significant nevertheless.

The other way to look at the earnings is to see how stable they were compared to book value. This perspective is built on the philosophy that stocks are like bonds: investor buys his or her own share of the book value of a company. The company gets a certain return to this book value. The investor return should converge with this return on equity over time,

Chart 9. RONV Average and Marker Cap Weighted 1937–1947

In percentage terms



Authors calculations based on primary sources and Vaihekoski data. RONV is calculated as earnings (collected by the author) divided by nominal book values (collected by the author). Market caps are based on Vaihekoski data.

depending how much the investor paid for the stock compared to book value. In this calculation, nominal book value is used (see terms explained above).

The minimum average RONV was 8% in 1940 and the maximum was 22% during 1946 as the chart 9 shows. Changes in book value affect this measurement and nominal book value rose threefold during 1937–1947, but nominal earnings were up four–fold. Unfortunately, nominal book value is only loosely linked to the real equity of a company, as company can have other assets as well in the asset side of the balance sheet. However, based on this evidence, the earnings of HSE companies compared to nominal values were volatile. Their profitability improved hugely from 1940 till 1946, probably skewed by inflation since the asset values are not changed immediately with inflation, whereas earnings reflect inflation right away when companies raise prices of their end–products.

5.4. The price level of the Helsinki Stock Exchange during 1937–1947, or flight–to–safety–effect rediscovered.

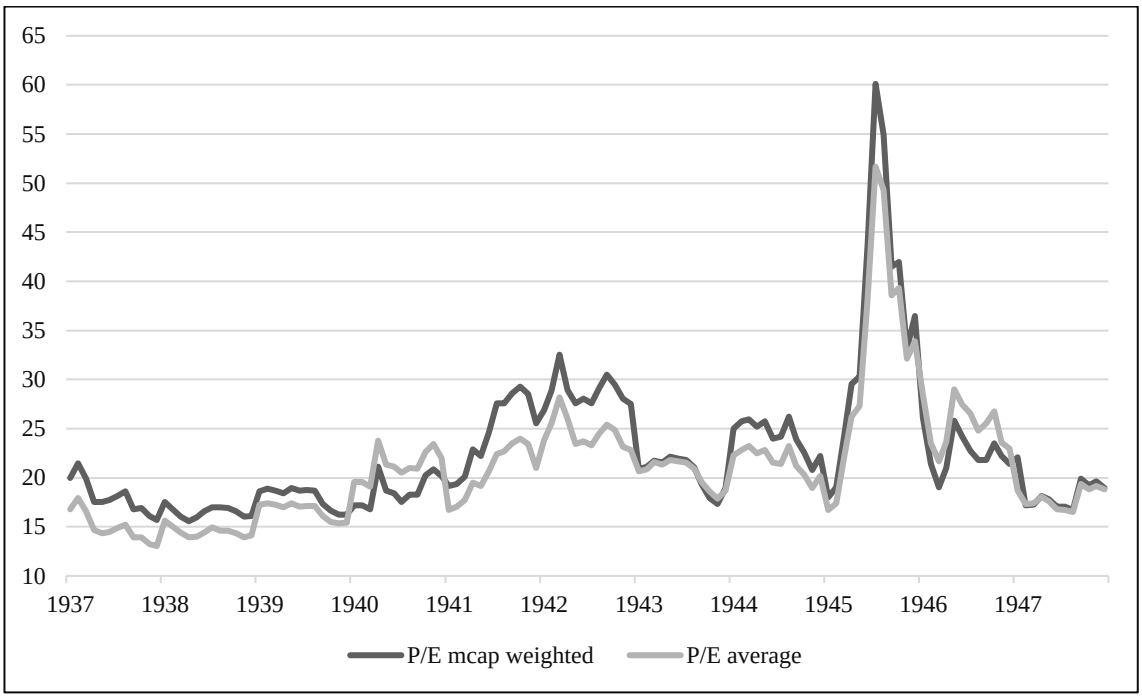
Earnings data allows us to calculate the P/E–ratio for HSE during the time period under consideration. As implied above, it is unclear how much investors followed fundamentals when investing and how much they were speculating with stock movements. Nevertheless, it could be said that the stock market price level was reasonable during most of the time in the time frame. The speculative booms can be clearly seen in this statistical data, supporting anecdotal evidence offered by Stjernschantz.

The HSE traded with earnings multiples of 13 to 18 from January 1937 to November 1939. Earnings remained effectively constant, so stock market was soft because of lowering multiples, not because of falling earnings, though the economic prosperity achieved by 1937 seemed to be threatened by the end of 1930's.[160] Remember from the above that the HSE movements remained broadly calm during 1937 to Autumn 1939. The "escape to real values" Stjernschantz remarked could be seen at the end of 1940 and especially in 1941, can be proved by P/E ratios as well.

We know that earnings were not improving, but in real terms declining sharply. But price multiple almost doubled from the beginning of 1941 from 16.7 (average P/E for all HSE companies) to 28.2 by March 1942. The government actions to cool down equities seemed to work from this perspective, since earnings were growing with inflation or at least stayed constant on aggregate during 1941–1945 but P/E multiples slid back to more sustainable levels and were around 21 times earnings 1943–1944.[161]

[160] Stjernschantz 1987, p. 74.
[161] There is no P/E data for long periods of time in Finland, but for US markets the P/E ratio has been on average 15 during 1871–2016. See Shiller's calculations in http://www.multpl.com/. Accessed 17.1.2017. We can only assume that this multiple has been similar in Finland for longer periods. Median forward P/E, looking earnings one year ahead, has been around 16 in Finland during 2006–2016. Source: Bloomberg.

Chart 10. P/E Ratios, Market Cap Weighted and Average 1937–1947



Source: Authors calculations.

The huge multiple expansion during 1945 and the sequential collapse can be seen very clearly in the above chart 10. Stjernschantz remarks that curiosity towards stocks awakened up again after few year's lethargic period and especially industrial stocks were traded by the public. Industrial stocks gave protection against the rising inflation, it was said. To add up to the speculative boom, the supply of cheap margin was plenty. "The atmosphere started to resemble races with wagers doing bets with their stretching antennas".[162] Tiderman notes that the reason for this surge in stock prices cannot be explained by rising optimism about the economic condition of the war ridden nation, but rather by the galloping inflation. The bourse committee even introduced limits of 10% and, for a few days, 2% of daily movements in stock prices (nobody was willing to sell after 2% rise, of course) to cool down the stock jubilee.[163] Earnings multiples manifest this speculation well as the average P/E for HSE companies rose from 16.7 in January to 51.7 in July, only to violently drop to 33.9 by year–end and reaching 16.5 in August 1947, or -68% below the peak.

[162] Interesting comparison to snails by Stjernschantz 1987, p. 82.
[163] Tiderman 1962, p. 15–17.

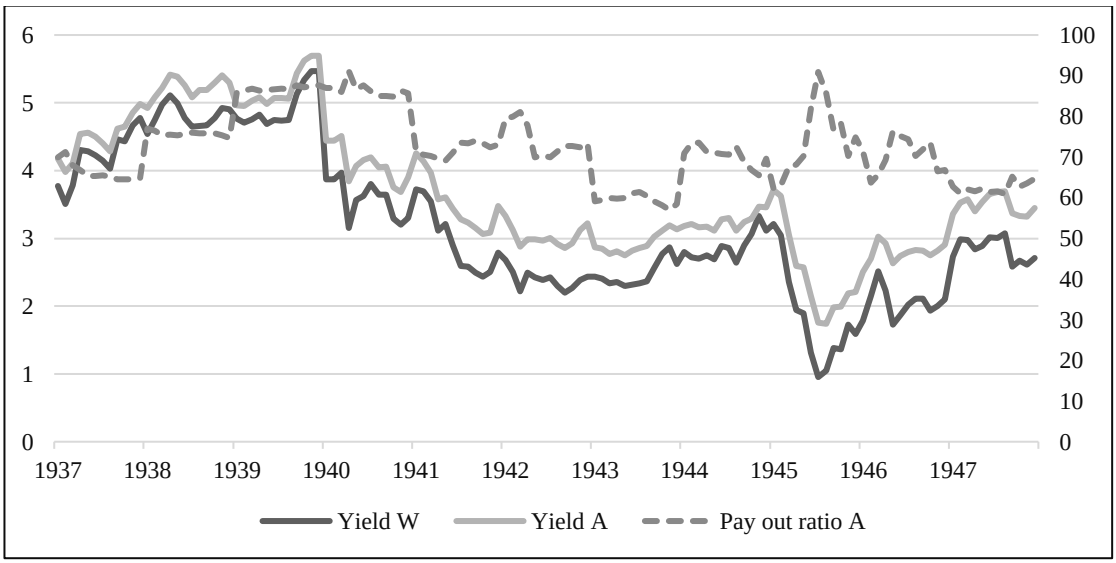
This same story can be also seen in P/NV ratios, though nominal equity book value was, of course, more stable. By looking at these business fundamentals, Stjernschantz's remarks about hot stock market or speculation can be verified. Still, the trading room was more quiet compared to the noise and ruckus in 1918, as trading was automatized and only 12 traders were just pushing buttons and executing trades.[164] The price levels are showed in table 4 below.

Table 4. Measures of Price Levels in HSE 1937–1947

	P/E mcap weighted	P/E average	P/NV w	P/NV a
MAX	60.11	51.68	10.08	8.07
MIN	13.32	11.80	1.69	1.53
AVERAGE	21.86	20.39	3.09	2.75
MEDIAN	19.78	19.51	2.85	2.59

Source: Authors calculations for P/E, Vaihekoski and the author for P/NV.

Chart 11. Dividends in HSE 1937–1947



Source: authors calculations and Vaihekoski. Market cap weighted and average dividend yields and average pay–out ratios, in percentage terms.

Another way to look at the price levels is to calculate the average dividend yield for HSE, see chart 11. The dividend yield on average was a maximum of 5.69% on the eve

[164] Ibid., p. 82.

of Winter War and reached the bottom of 1.74% during the speculative boom followed by peace in 1945.

The average and market cap weighted dividend yields dropped during the war, indicating that investors gave more weight on share price development rather than cash flow received via dividends. The average yield on HSE companies was 3.68% during the time period. Average pay–out ratio, calculated as E/P (an inverse P/E to get earnings yield) divided by dividend yield, moved in a range from 56.96% to 91.13%. The average pay–out ratio was 73%, meaning that businesses distributed their profits mostly to owners, despite restrictions on dividend pay–outs as mentioned above.

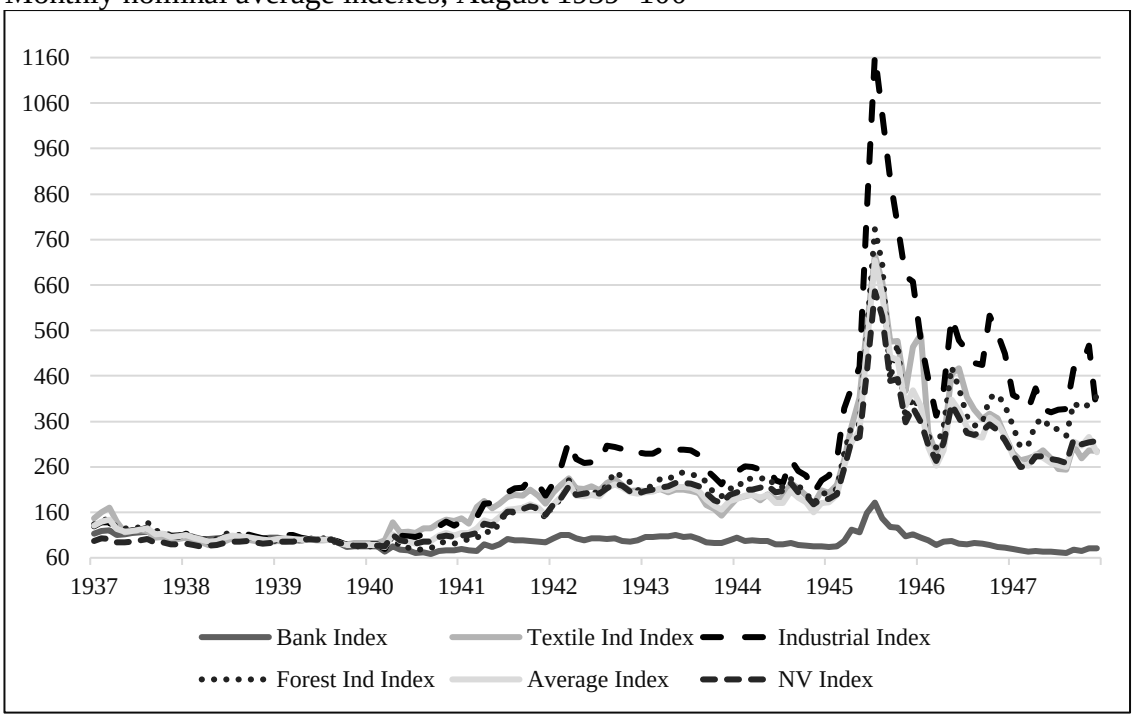
5.5. Different Industries: Different Stories.

The war did not treat different industries in an equal way: especially the banking sector was devastated by the rampaging inflation. As has been explained above, industries with physical assets fared much better during this turbulent period. For this study, an index with 12 different companies has been assembled using stock bid data received from Vaihekoski and the earnings data collected by the author for the calculation of P/E ratios, see chart 12.

Each industry category is an average comprised of indexed performances of the three biggest companies as measured by nominal book values. The included stocks were as follows: for Bank index: Kansallis Osake Pankki, Yhdyspankki and Helsingfors Aktiebank; textile industry: Finlayson, Tammerfors Linne & Jern Man and De förenta Yllefabrikerna stam; industrial companies: Wärtsilä, Nokia and Finska Gummifabriks; and for forest industry: Yhtyn. Paperitehdas, Kymmene and Enso–Gutzeit were used. To remind the reader, companies like Wärtsilä and Tammerfors Linne & Jern Man were multi–industry conglomerates, so the comparison is a bit artificial for these companies with wide interest in many industries. It is also noteworthy that an average index built from the price quotes of these stocks is eerily similar with the total return index by Vaihekoski and Nyberg, illuminating the fact the largest companies dominated index performance.

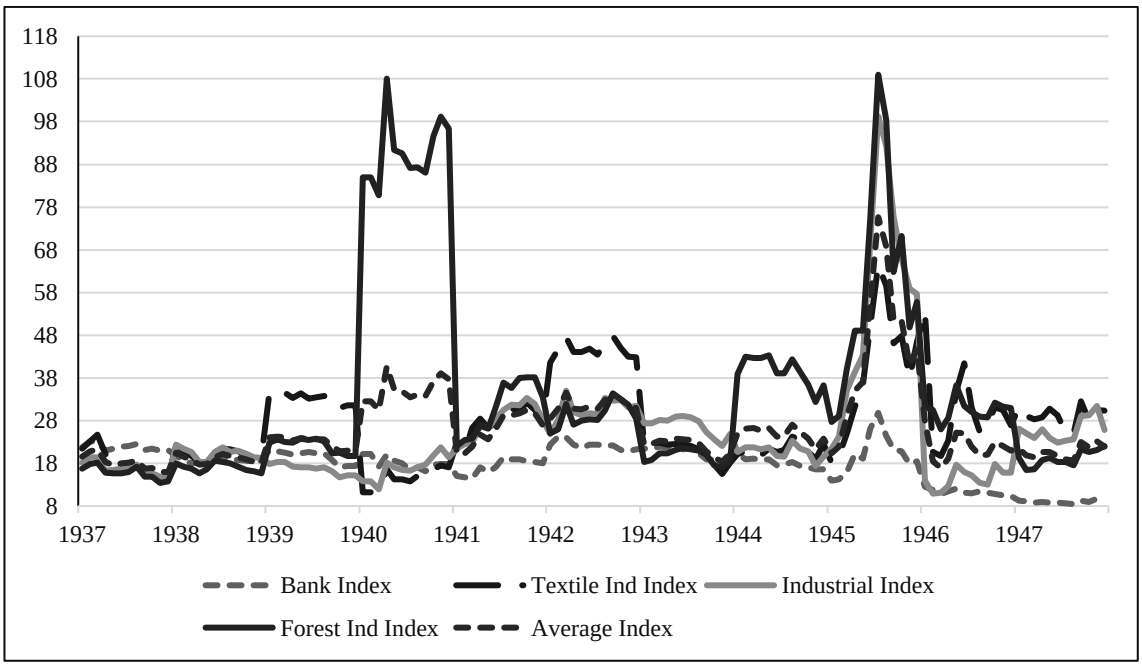
Chart 12. Different Industries: Different Stories 1937–1947

Monthly nominal average indexes, August 1939=100



Source: Vaihekoski. Index averages calculated by the author based on data by Vaihekoski.

Chart 13. Monthly P/E Ratios of Different Industries 1937–1947



P/E ratios for above mentioned indexes. The spike of 1940 for forest industry is because of reduced earnings for Kymmene stam, hence sky high P/E affecting the average. The speculative *hausse* of 1945 can clearly be seen here as well, but banking stocks did not receive the same attention and spiked with multiples around 30 times their earnings, compared to bubblish over 100 for forest industry. Authors calculation based on authors collection of earnings and bid prices by Vaihekoski.

The main observation from this comparison is the banking industry lack of comparative performance. Banks generate earnings by lending money and enjoying interest from those loans. As lending was affected by the war and inflation ate the real value of all assets denominated in the Finnish marks, it is not surprising that this sector was utterly devastated by the war and vice versa: the industrial companies fared much better, especially industrial companies Wärtsilä, Nokia and Finska Gummifabriks. Tiderman formulates that "it was natural that the stock prices surge was present in industrial stocks, but bank companies followed the suit as well", possibly reflecting this same line of thought.[165]

Industrial companies were much pricier when measuring them with P/E ratios as the chart 13 shows. For industrial companies, the average P/E for the period was 25 against the average of "only" 18 for banking stocks. Banking stocks were also left with P/E:s around 9 to 10 by 1947, compared to P/E:s well above 20's for industrial stocks. Asset rich forest companies had an average P/E of 34 during this period, but some amount of the high P/E can be attributed to temporarily reduced earnings of Kymmene stam in 1940, elevating the average.

5.6. The Aftermath.

The period 1937–1947 was a catastrophe for those who held positions in Finnish equities, yet those who kept their money under pillows lost certainly almost everything within the galloping inflation environment. Overall decline in the stock market was -60% in real terms during the time–period, translating into annual returns of -9,22%. Banking stocks fared even worse with -89% returns in real terms.[166] Banks such as Fastighetsbanken and Handtverk. Aktiebank went bust with catastrophic loan and asset losses in the lost Karelia and the devastated Lapland.[167] Industrial stocks fared better probably because of "real" substance, or assets, in their balance sheet: machines, production facilities, ships, inventories etc. Banking stocks equity is mainly composed

[165] Tiderman 1962, p. 16.
[166] As calculated from the UNITAS indexes. See explanations for indexes above.
[167] Kantanen 2012, p. 81. For Fastighetsbanken see http://www.porssitieto.fi/1912s.html, accessed 21.1.2017.

of cash or short term investments to bonds; was not a good store of value because of high inflation environment destroying the value of monetary goods.[168]

As in the French experience (see below), the most destructive element to real returns was high inflation, caused by gargantuan expansion of money supply when the war was financed with debt monetizing by the Bank of Finland. State budget was covered with tax or other income by little over 50% in 1941 and 1944 and 70% 1942–44. Public debt grew over nine–fold, deflated with whole–sale–price index, from 1938 to 1944. The number of banknotes grew more than seven–fold during the same timeframe.[169] In nominal terms HSE held still three times the value that it had at the end of August 1939, the high–point for many stocks. But in real terms, the years 1945–1947 were devastating as nominally index traded in side move but as whole sale prices rose almost three–fold 1945–1947 the real return was -47% on top of one–quarter loss occurred during 1939–1944. Overall, these years were depressive years for investors. For the stock market, the lost war coupled with massive inflation and political uncertainty during "danger years" 1944–48 was devastating in terms of real returns. Stjernschantz notes that "political events and market swings" went hand in hand and in 1947 stocks slipped for a moment when the government turned down the Marshall aid from the USA. On the other hand, investments into real economy needed more capital and pulled liquidity out of stock market and the same time the use of margin was suppressed.[170] Stock multiples plunged as well. After the speculative bubble of 1945, the P/E multiple stayed in mid 20's for 1946 but decreased to around 17 times earnings in 1947, still not "cheap" compared to long term averages but 15% less than the average of 20.4 during 1937–1947. To echo Le Bris remarks, the war followed by defeat is arguably the worst–case scenario for stock market.[171]

[168] For the demise of bank stock investors, banking stocks were still down in 1956 in real terms, representing around on tenth the value they had before the war. See Palmgren 1958, p. 54.
[169] Pihkala 1982, p. 325.
[170] Stjernschantz 1987, p. 85–86.
[171] Le Bris 2012, p. 1.

5.7. Comparing indexes: the Finnish stock market bites the dust.

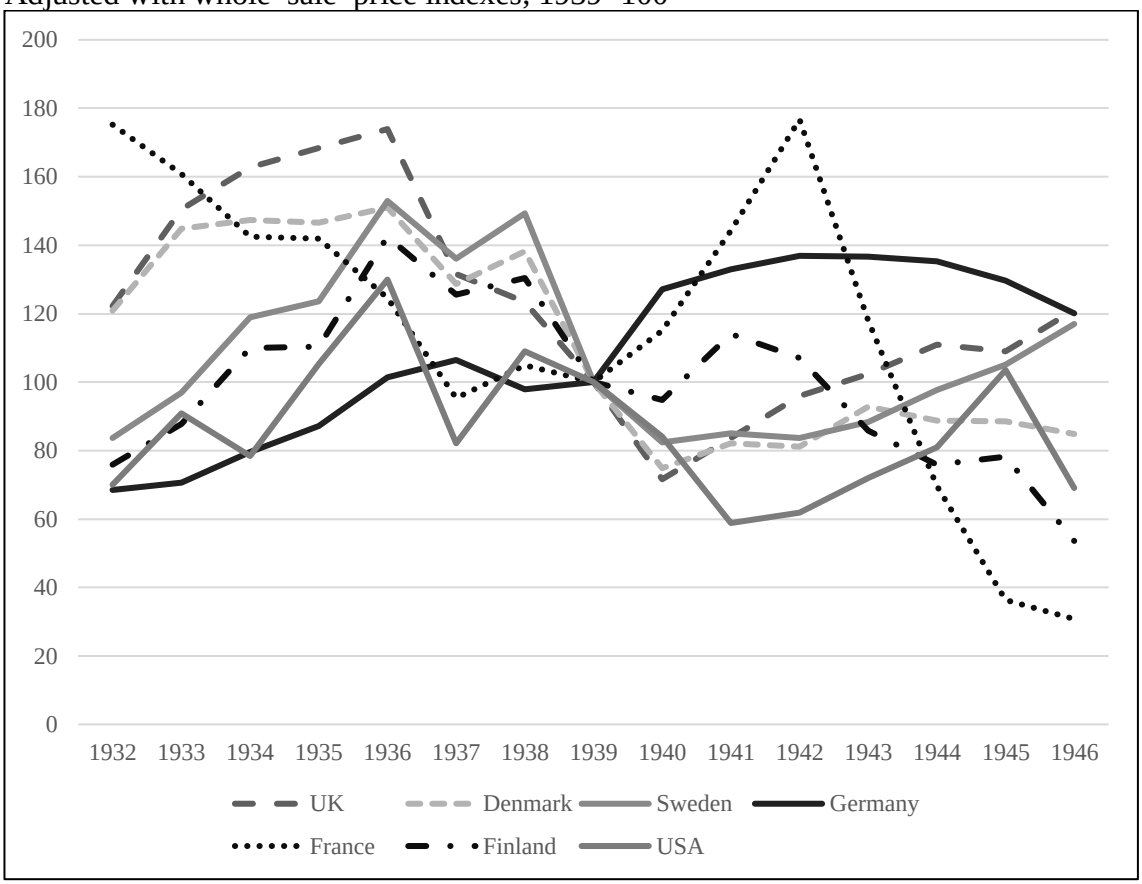
Next this paper compares differences in real returns of equities in Finland, Germany, France, U.S.A., U.K., Denmark and Sweden, see chart 14. Sweden is included as a non–belligerent country to compare returns between fighting and non–fighting states. All indexes are adjusted with whole–sale–prices to grasp the value–erasing nature of inflation.[172] All the data is from Global Financial data base, except the French data is from Global Financial Data only until 1938 and 1939–1946 from Le Bris.[173] The Finnish stock market delivered the second worst returns in time frame +-8 years, when 1939 is put as the base year, with returns of -46% in real terms by 1946. U.K. equities, were the "best" investment being the only market that did not deliver negative returns but almost doubled their real value during the war.[174] As mentioned above, the German stock market basically ceased to work efficiently in 1940 and data after that is flawed; in real terms the worth of equities would have been close to zero[175] and is not very well illustrated in the chart. Curiously, the chart shows that the German stock market recovered from the lows of the Great Depression, delivering returns of +85% from 1932 to 1940. From an investor point of view, the rise of Hitler was not taken only as a negative event, it can be observed.

The most significant price movements can be seen in the French stock market. Stocks experienced a bear market, sliding till the year 1940 from 1932. France experienced extended recession and political turmoil in the 1930's.[176] Stock market high was in 1942 after a similar flight–to–safety effect as in the Finnish case: savers tried to protect their money from diminishing purchasing power. After that, accelerating inflation and decreasing market led to highly negative real returns and stocks decreased -69% by 1946 compared to 1939. The chart illustrates well that Swedish or U.K. equities did not experience a severe post–war slump. They did not experience fighting in their own ground or bombing raids excluding the U.K. that would have caused disruption in production and other economic life.

[172] See a similar comparison, though in dollar terms, in Ferguson 2008, p. 440.
[173] See Le Bris 2012. Le Bris data is more recent, therefore preferred over the data of GFD.
[174] Ferguson 2008, p. 465.
[175] Ferguson 2008, p. 39–41.
[176] Sayvy 1969, p. 21–35.

Chart 14. The Stock Markets in Selected Countries 1937–1947

Adjusted with whole–sale–price indexes, 1939=100



Source: Global Financial Data and for the French market after 1939 Le Bris 2012.

Finland, Germany and France experienced destruction of industrial capacity or other negative effects in their economic structures. Their currencies deteriorated and inflation ran rampage. After the war the Finnish Markka was devalued multiple times because of risen price levels, thus sharply decreasing the value of financial assets nominated in Finnish markka.[177] The above mentioned Le Bris found that in the French case, the way how the war was financed had profound effects on real returns in equity markets.[178] This is seen in a larger context here: as in France, both Germany and Finland used excessive debt monetizing during the war. Inflation in Sweden and United States was not high: for the period 1939–1945 it was on average 6.13% and 3.88% annually compared to 25.74% in France and 28.8% in Finland, respectively.[179] Germany's

[177] Kuusterä and Tarkka 2012 p. 59–82.
[178] Le Bris 2012, 22–23.
[179] Numbers calculated using Global Financial Data.

inflation data is not usable in this period due to strict price controls. Interestingly, the stock market in the occupied Denmark fared better than the U.S. market. It is interesting that the victors USA stock market performed poorly in real terms. Stocks were in the same point in real terms where they had been in 1939 when the war ended and after the war they slumped because of fear of similar depression that occurred after the First World War. This nevertheless considering the fact that businesses were benefited by the war in the USA.[180]

6. Conclusion

The stock market in Helsinki was almost vaporized after the World War II. Inflation ran rampage, destroying the real value of money saved in stocks while the stock indexes remained volatile but basically in the same level after the war. The bourse was down only 23% in real terms by the end of September 1944 compared to end of August 1939 when Germany invaded Poland. But the after–war inflation quickly diminished the real value of stock holdings that in the end went to 37% at the end of 1947 compared to the heights of summer 1939. Industrial companies fared much better than banks that lost eventually almost 90% of their real value during this turbulent period.

The stock market experienced two bull markets that stretched valuations. The anecdotal evidence presented in the beginning of this paper is confirmed with statistical evidence comprised of company net earnings and high price–to–earnings derived from them. The *hausse* of 1940–1942 stopped when P/E:s expanded to almost 30, on average. The combination of high valuation, deteriorating prospects for Axis victory and increased supply of shares via forced listings stopped the stock market from climbing more. The bubble of 1945 was even more extreme when many companies, especially industrials, traded with P/E:s of 30 to 108, average being over 50 times their earnings. This boom ended in bust as well when stocks slipped to same levels by December they commanded back in January 1945.

[180] For U.S. Corporations in World War 2, see Herman 2012.

How about the question of the stock market anticipation of the coming crisis? While it is clear no market participant nor commentator could forecast how severe and long the Second World War would become, evidence represented in this paper points out that the Finnish stock market was discounting an ever increasing possibility of war after the Molotov–Ribbentrop–pact at the end of August and reacted vigorously to German hostile march to Poland. The Finnish mobilization of reserves at the beginning of October was also greeted with a stock market slide, signalling nervousness among market participants. The stock market was down approximately 20% since the Molotov–Ribbentrop–pact when the Soviets started to pour in crossing the Russo–Finnish border.

The stock market rose again after the Winter war, but especially for the movements after 1941, it is increasingly difficult to tell whether the stock market reflected the change of fortunes in war, or rather it was performing an increasing safe–haven function for investors shielding themselves from negative effects of inflation. The stock market depreciated by almost 7% during June 1944, reflecting the precarious situation Finland faced in the geopolitical landscape after the Soviet offensive in Karelian Isthmus. Finland was eventually knocked out of the war, but she successfully warded off the Soviet advance to the Finnish mainland. After the armistice signed in September 1944, political situation remained dangerous and rising inflation effectively all but wiped out the Finnish investors.

To sum up, the stock market reveals two important aspects about the expectations of contemporaries: first, the stock market evidently reacted to the increased threat of war and was expecting Finnish involvement in a way or another since the end of August 1939. Second, after 1941 it mostly functioned as a safe–haven and thirdly, cheap credit fuelled occasional speculative *hausses* of 1942 and 1945.

Comparing to other stock markets during the time period, the Finnish stock market relates to ones in Germany and France. Especially Germany experienced physical destruction so epic and calamitous in scale that stock market went *de facto* to zero. The French story shares similar characteristics with the Finnish one. Monetizing debt and financing of war with printed money led to high inflation that, together with destruction and effects of war economy, greatly diminished the money value and importance of the

stock market in the French economy. Helsinki stock exchange was diminished to a similar, greatly diminished role and it took until the 1980's that the turbulent period of the 1930's and 40's was left behind.

The case of the Finnish stock market certainly speaks volumes for the argument that war, particularly a lost one, is the most dreadful scenario an investor can face. Especially banks, always vulnerable to shocks, monetary instability and unpredictability, were hit hard by this turbulent sequence of events. But historical events never repeat themselves in a similar fashion. Contemporary investors must gauge the effect of new geopolitical crises on their portfolios by looking forward, but historical evidence on this part gives investors some confirmation that owning securities in the possible to–be–defeated side's bourse can be a dangerous adventure to make trough.

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Appendix

1. Corrected Number of Shares and Share Capital in Certain Companies

There were certain differences in the share data regarding the number of shares received from Vaihekoski. Differences affected only a handful of companies and was probably caused by different data sources as Nyberg and Vaihekoski used the so–called Iron Book where nominal values and share capital was also listed. They did not include preferred shares into share count and the same procedure is used in this paper as well.[181] These tables list the share counts used in this study to calculate earnings per share, share capital and market values.

Table 1. Arabia number of shares

Year	No. of Shares	Nominal Value	Share Capital
1936	64 000	500	32 000 000
1937	64 000	500	32 000 000
1938	64 000	500	32 000 000
1939	64 000	500	32 000 000
1940	64 000	500	32 000 000
1941	64 000	500	32 000 000
1942	80 000	500	40 000 000
1943	120 000*	500	60 000 000
1944	120 000*	500	60 000 000
1945	200 000*	500	100 000 000
1946	226 340*	500	113 170 000
1947	339 510*	500	169 755 000

Arabia. *The number of shares corrected by dividing Share Capital, taken from Firmor i Finland and Suomen Pankit ja Osakeyhtiöt Yearbooks, with the nominal value of shares. The nominal value was 500 FIM in Vaihekoski data and Suomen Pankit ja Osakeyhtiöt yearbooks.

Table 2. Enso–Gutzeit number of shares.

Year	No. of Shares	Nominal Value	Share Capital

[181] See Nyberg and Vaihekoski 2009, p. 11–12.

1936	540 000	500	270 000 000
1937	648 000	500	324 000 000
1938	648 000	500	324 000 000
1939	648 000	500	324 000 000
1940	648 000	500	324 000 000
1941	648 000	500	324 000 000
1942	648 000	500	324 000 000
1943	810 000*	500	405 000 000
1944	810 000*	500	405 000 000
1945	810 000*	500	405 000 000
1946	855 980*	500	427 990 000
1947	854 682*	500	427 341 000

Enso–Gutzeit. *Share Capital taken from and Suomen Pankit ja Osakeyhtiöt Yearbooks and divided with the nominal value of the share.

Table 3. Other Companies

Year(s)	Company	No. Of Shares	Nominal Value	Share Capital
1947	Ferraria	40 000	500	20 000 000
1947	Finska Gummifabriks AB	589 640	500	294 820 000
1936–1940	G. A. Serlachius	50 000	1 000	50 000 000
1947	Kaukas Fabrik	13 448	20 000	268 960 000
1947	Kymmene Stam	353 305	2 000	706 611 000
1947	Pargas Kalkbergs	2 469 905	100	246 990 500
1947	Stockmann	73 102	2 000	146 204 000
1936	Tammerfors Linne & Jern Man	68 000	2 000	136 000 000
1937	Tammerfors Linne & Jern Man	70 000	2 000	140 000 000
1947	Suomen Sokeri	601 745	600	361 047 000
1947	J. Stenbergs Maskinfabrik	10 776	2 000	21 552 000

*Corrected using data observed in Suomen Pankit ja Osakeyhtiöt yearbooks and Firmor i Finland yearbooks.

2. The HSE Total Earnings, Billions Old FIM

Year	HSE Earnings by year end, billions old FIM
1936	0.356
1937	0.419
1938	0.415
1939	0.373
1940	0.349
1941	0.397
1942	0.523
1943	0.783
1944	0.645
1945	0.800
1946	0.883
1947	1.415

Source: author calculations based on primary sources.